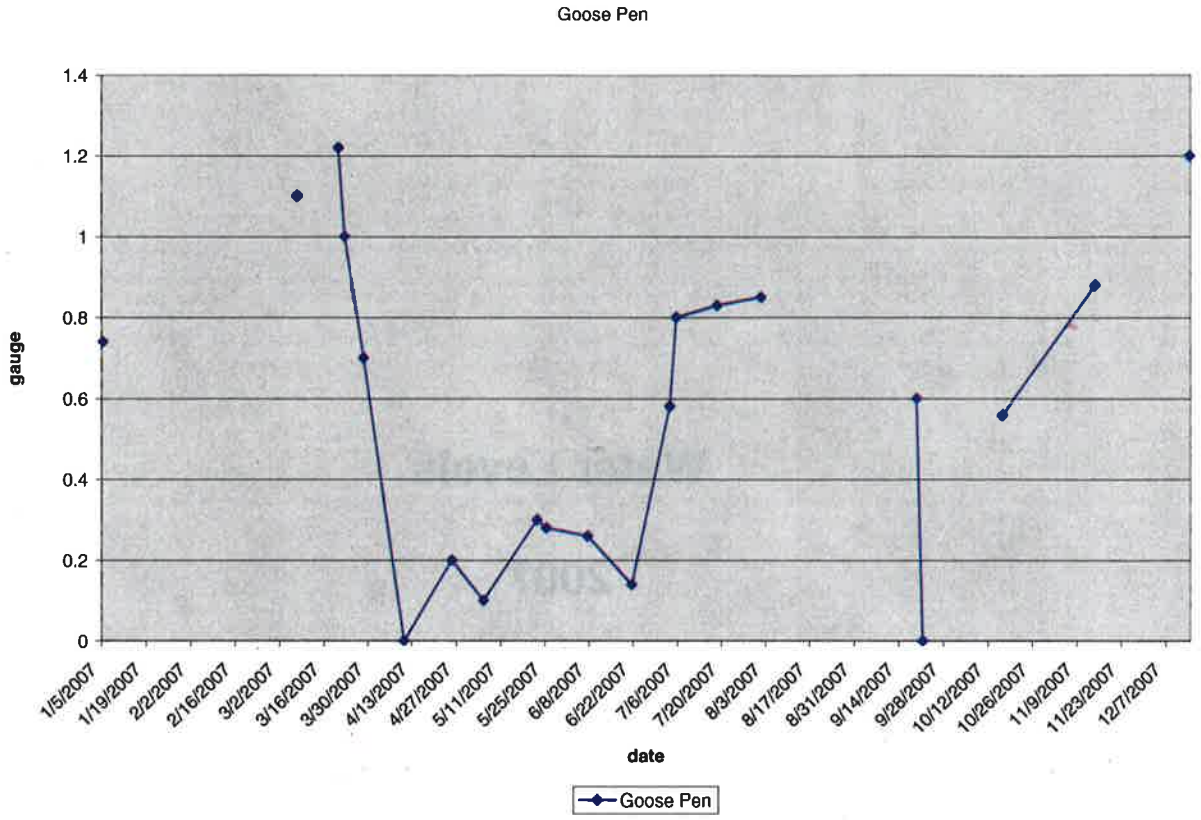
Water Levels

2007

Unit: Goose Pen
Acres: 57
2006 Activity: A new gauge was installed. Drawn-down in mid March for 50% mudflats by 2nd week of April. Continuous rain prevented from mechanical control of flowering rush. A short dry spell caused the rush to go dormant, an undesirable state for spraying. Mudflats and shallow water provided shorebird habitat. Unit refilled naturally from rain late September.



Unit Goal: Provide foraging and resting habitat for migratory birds.

Objectives: Control exotic flowering rush and purple loosestrife. Encourage more desirable vegetation.

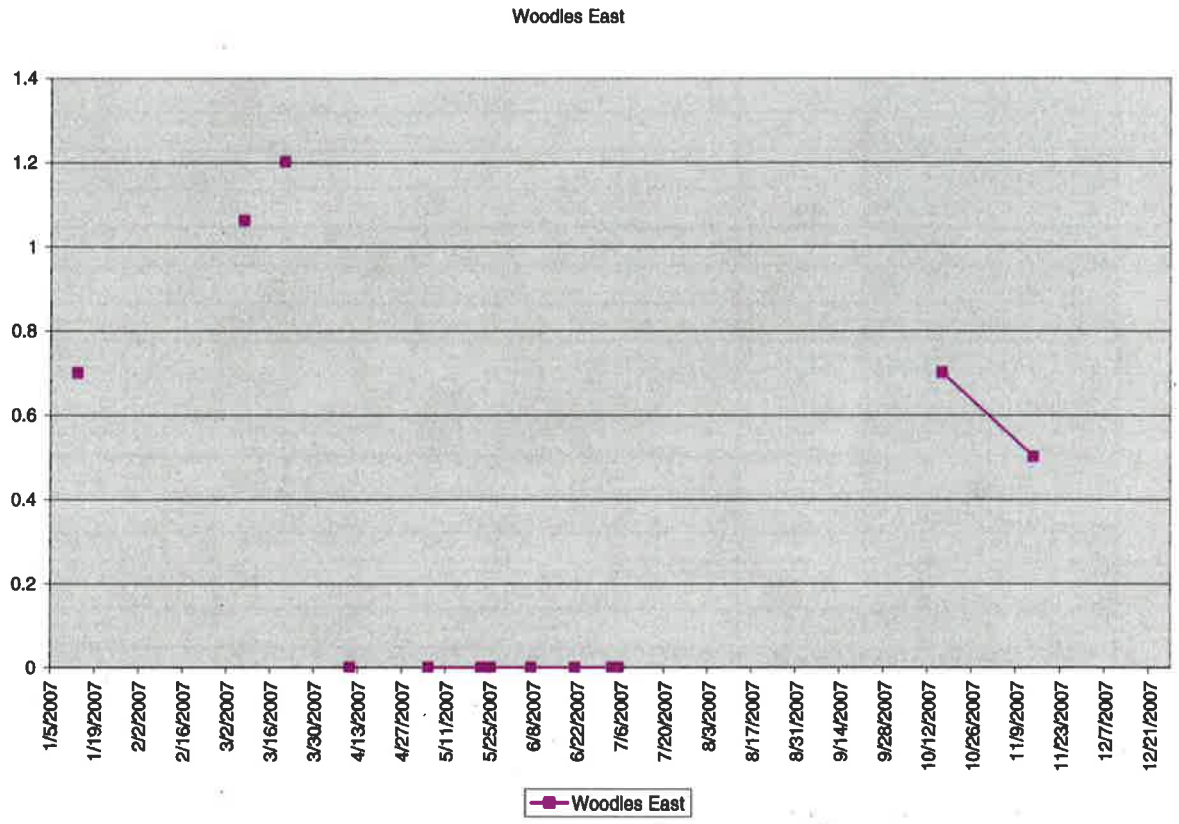
Strategies: Maintain full pool to set back any P. loosestrife that may have gotten established in 2006.

Management Strategy Constraints:

Unit: **Goose Pen**

Water level guide	2007 Date	Actual Water level	Notes
	Jan.		
	Feb.		
	Mar. 23	1.98	
	Apr. 17	1.94	
	May 15	1.80	
	June		
	July 10	1.28	
	Aug. 1	1.00	
	13	1.20	
	Sept.		
	Oct. 9	~~1.06~~.98	
	30	.94	
	Nov.		
	Dec.		

Unit: Woodies Roost East
Acres:
2006 Activity: New gauge installed. Drawn-down late March/early April. Dike and water control structure repaired in N-S dike dividing the west side of the unit from the east. Reflooded in September.



Unit Goals: Provide foraging habitat and cover for wading birds and waterfowl.

Objectives: Manage for hemi marsh conditions

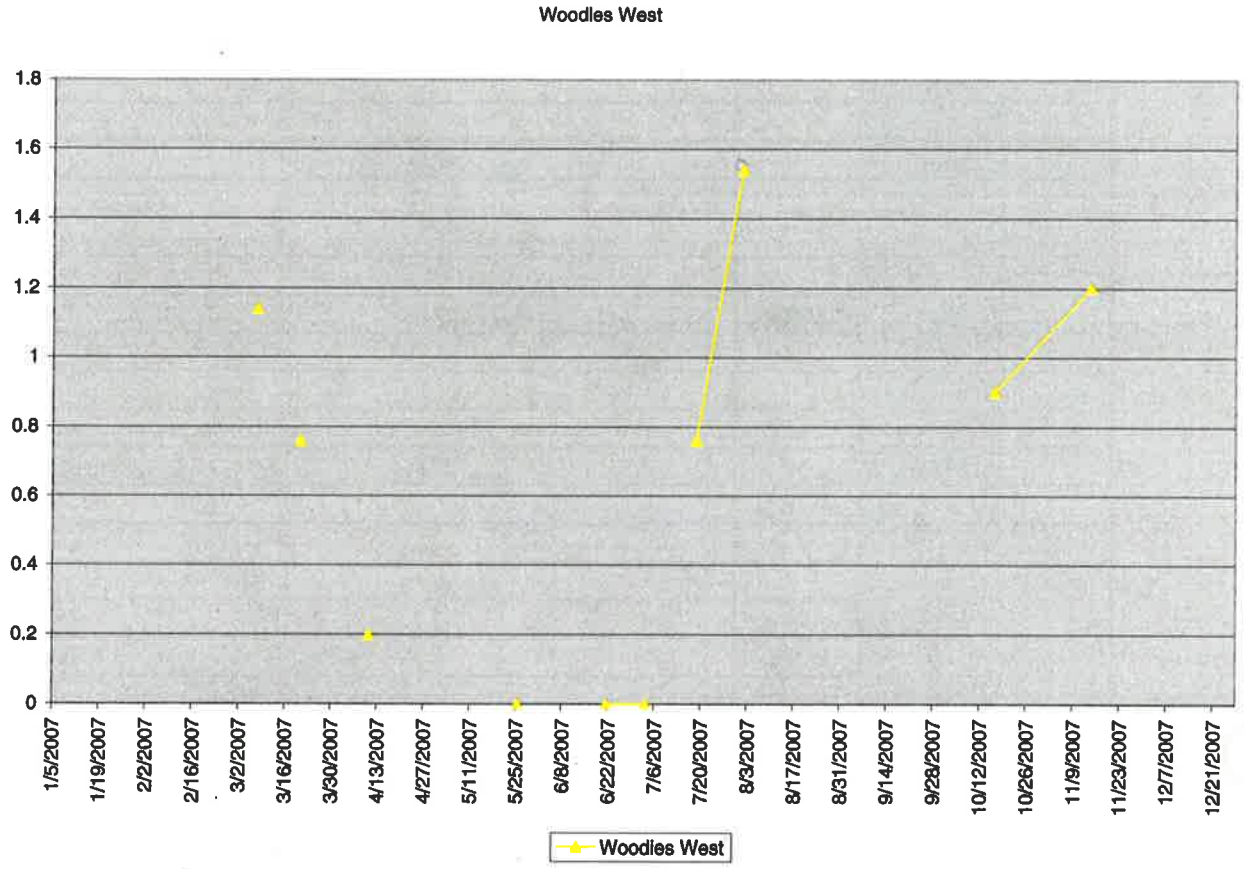
Strategies:

Potential Problems: Beaver

Unit: **Woodies Roost East**

Water level guide	2007 Date	Actual Water level	Notes
	Jan.		
	Feb.		
	Mar.		Stole took some H2O off
	Apr. 17	31 ~~[illegible]~~	Near top of gauge
	May 9		" " Pat called - will open 2-3" to let water out.
	15	2.68	Gate was closed
	June 11	2.44	
	14	2.30	
	July 10	1.80	
	Aug. 13	1.58	
	Sept.		
	Oct. 9	1.76	
	Nov. 1	1.64	
	Dec.		

Unit: Woodies Roost West
Acres:
2006 Activity: New gauge installed. Drawn-down late March/early April. Dike and water control structure repaired in N-S dike dividing the west side of the unit from the east. Reflooded in September.



Unit Goals: Provide foraging habitat and cover for wading birds and waterfowl.

Objectives: Manage for hemi marsh conditions

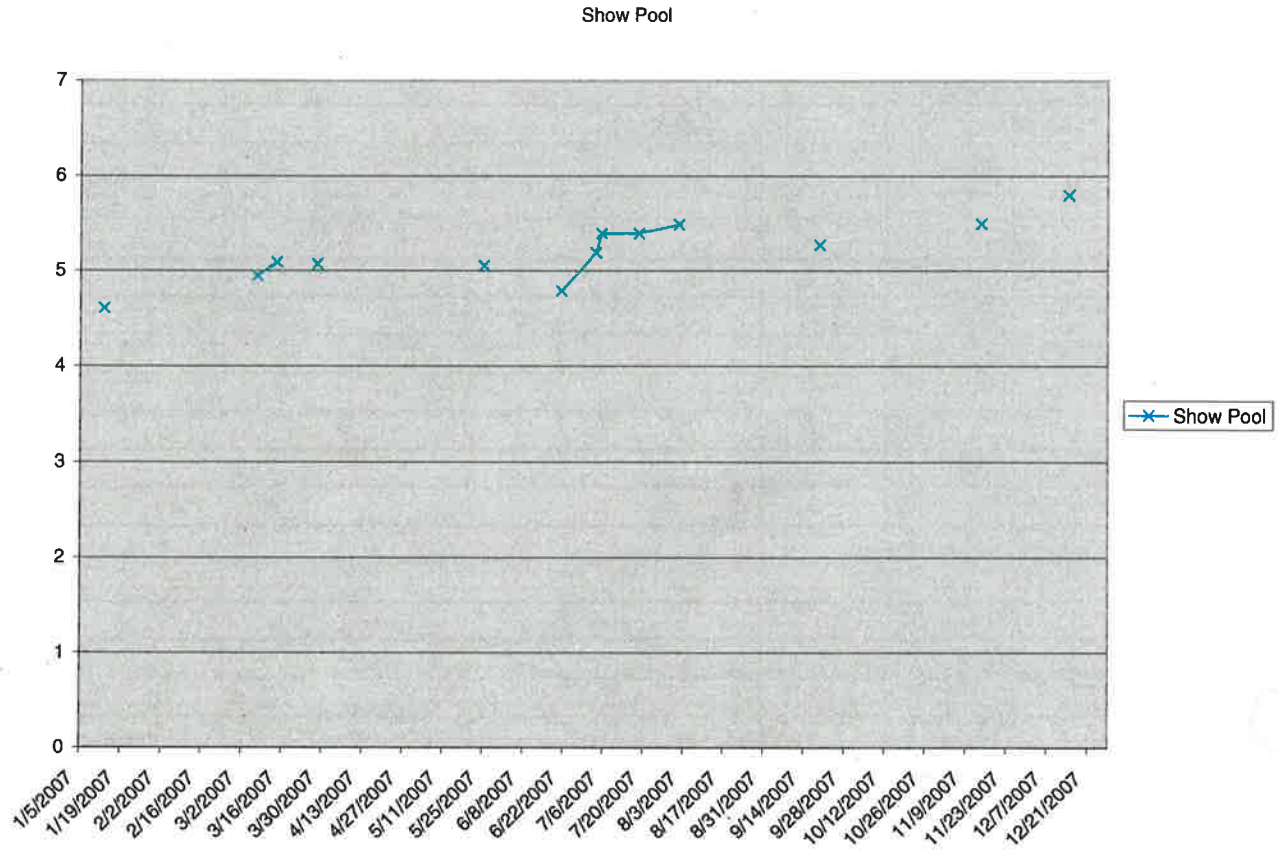
Strategies:

Potential Problems: Beaver

Unit: **Woodies Roost West**

Water level guide	2007 Date	Actual Water level	Notes
	Jan.		
	Feb.		
	Mar.		
	Apr. 17	1.7	
	May 15	1.46	
	June 11	1.24	
	14	1.14	Sm.
	July 10	0.54	
		0	No water at gauge
	Aug.		
	Sept.		
	Oct. 9	1.20	
	Nov. 1	1.0	
	Dec.		

Unit: Show Pool
Acres: 41
2006 Activity: Stoplogs were set to allow passive water level management in the unit. A 7" board was added in January, and full pool (5.80) was achieved in December.



Unit Goal: Because of the location of this pool to the office, it has been designated as a "show" pool with the intent that it can provide viewing of waterfowl including other wildlife and be a model wetland. This unit will be managed as a permanent wetland with deeper water to over winter fish and provide public catch and release fishing opportunities.

Objectives: Increase diversity of emergent marsh vegetation and provide deep water for fish habitat.

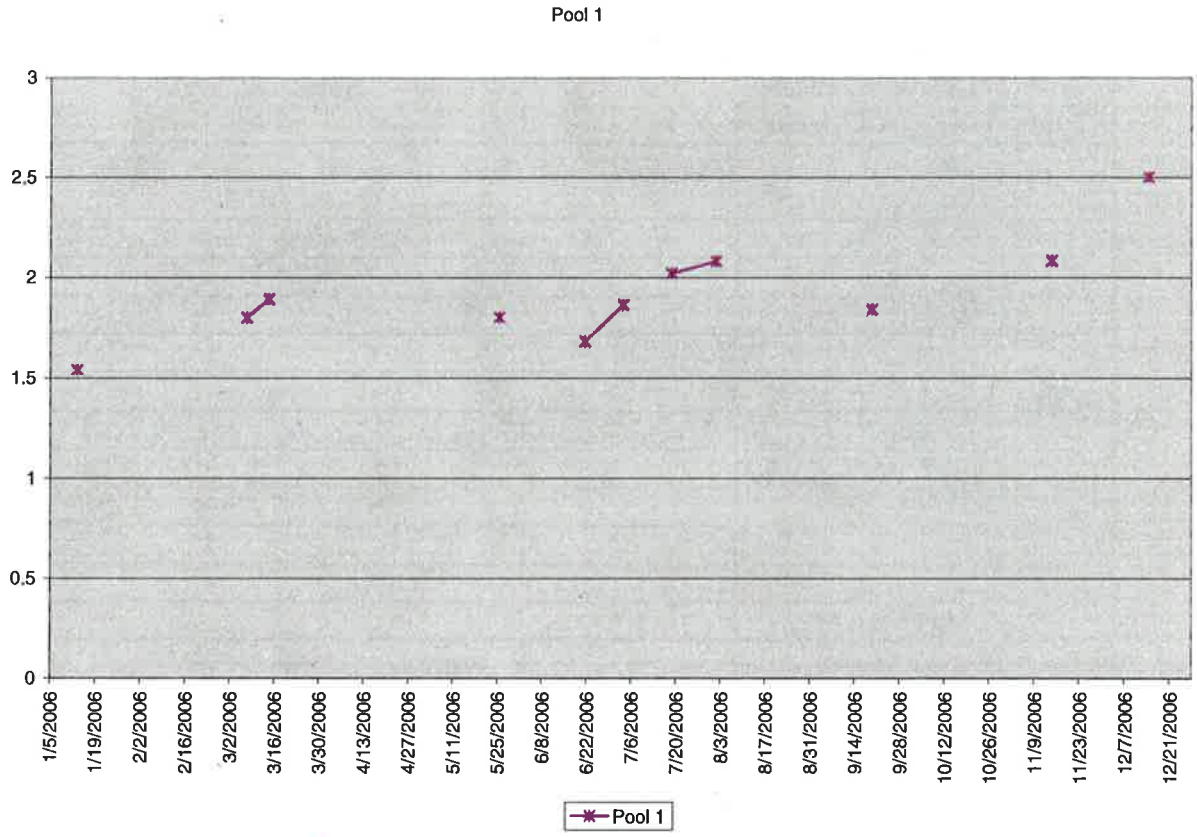
Strategies: Replace 7" board with a 5" board. 5.80 to high on dikes. Monitor dikes, woods behind shop, and water depth on higher ground. Treat invasives.

Management Strategy Constraints: East dike and south dike weakest/lowest of unit. Max water level is 5.80.

Unit: **Show Pool** 16"
Agridrain ~~15 3/4"~~ wide. East dike + South dike weakest/lowest. Max level 5.80!

Water level guide	2007 Date	Actual Water level	Notes
	Jan. 3	5.82	Changed top board from 7" to 5" - New max level ≈ 5.6
	1/10	5.75	
	Feb.		
	Mar. 23	5.78	
	26	5.74	Lifted bottom board (5")
5.6	27	5.68	
	28	5.60	Closed board gap - water to top of board.
	Apr. 17	5.62	
	May 16	5.62	
	June		
	July 10	5.08	
	Aug. 2	3.92	
	13	5.00	
	Sept.		
	Oct. 9	4.86	
	30	4.82	
	Nov.		
	Dec.		

Unit: Pool 1
Acres: 343
2006 Activity: No active management in 2006.



Unit Goal: Provide habitat for nesting common terns, foraging herons, mussel beds, rails, and fish. As well as provide a rest area for waterfowl.

Objectives: The topography of this unit allows for a variety of water level depths. To provide habitat for nesting common terns, fish and mussels, maintain deep (3-4ft) open water areas. Provide emergent and submergent wetlands for wading birds, waterfowl and invertebrates. The higher elevation areas along the south and north parts of the unit will provide flooded grass and sedge areas for rails.

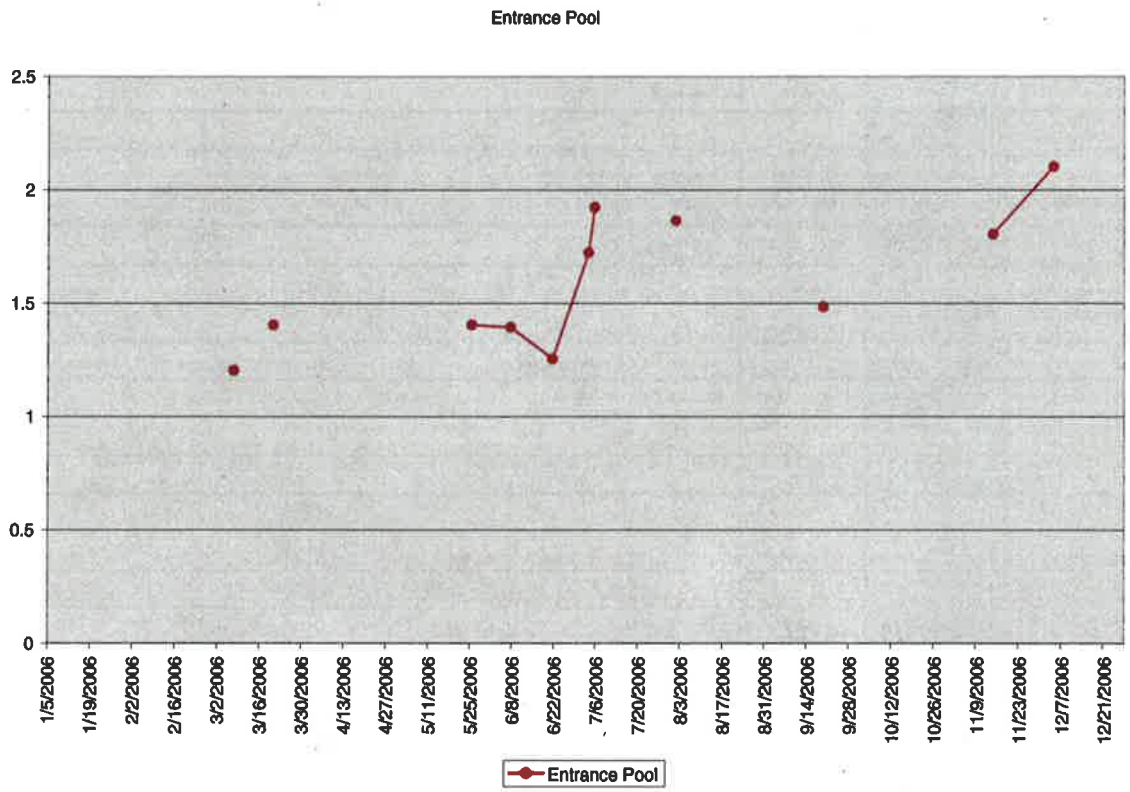
Strategies: Ensure unit is at optimum pool in the spring and allow evapotranspiration to decrease water levels no lower than 0.90 by September.

Management Strategy Constraints:

Unit: **Pool 1** – Common dike (East side) lowest dike

Water level guide	2007 Date	Actual Water level	Notes
	Jan. 3	2.50	
	1/10	2.565	Opened ⑫ 10" @ 9am 4pm – 2.55 1/11 – 1.50@10am open to 19"
	[redacted] 1/12	2.46	Closed 1pm.
	Mar. 23	2.88	Opened 24" at 10am
	26	2.70	at 8am
	28	2.60	4 pm
2.0			
	Apr. 4	2.22	7 – 2.10 Close
	17	2.12	
	May 16	2.10	
	June 18	1.92	
	July 10	1.58	
	Aug. 2	1.32	
	13	1.48	
	Sept.		
	Oct. 9	1.26	
	30	1.22	
	Nov.		
	Dec.		

Unit: Entrance Pool
Acres: 150
2006 Activity: A new gauge was installed. Stop logs were set to allow passive water level management. Boards leaked throughout the year.



Unit Goal: Provide a diversity of marsh type habitats, ranging from cattail stands to open water. Attract a variety of waterfowl, shorebirds, water birds, and wetland animals to provide opportunities for wildlife viewing. Control exotic invasive species.

Objectives: Provide shallow to deep emergent marsh. Maintain higher water levels to combat purple loosestrife.

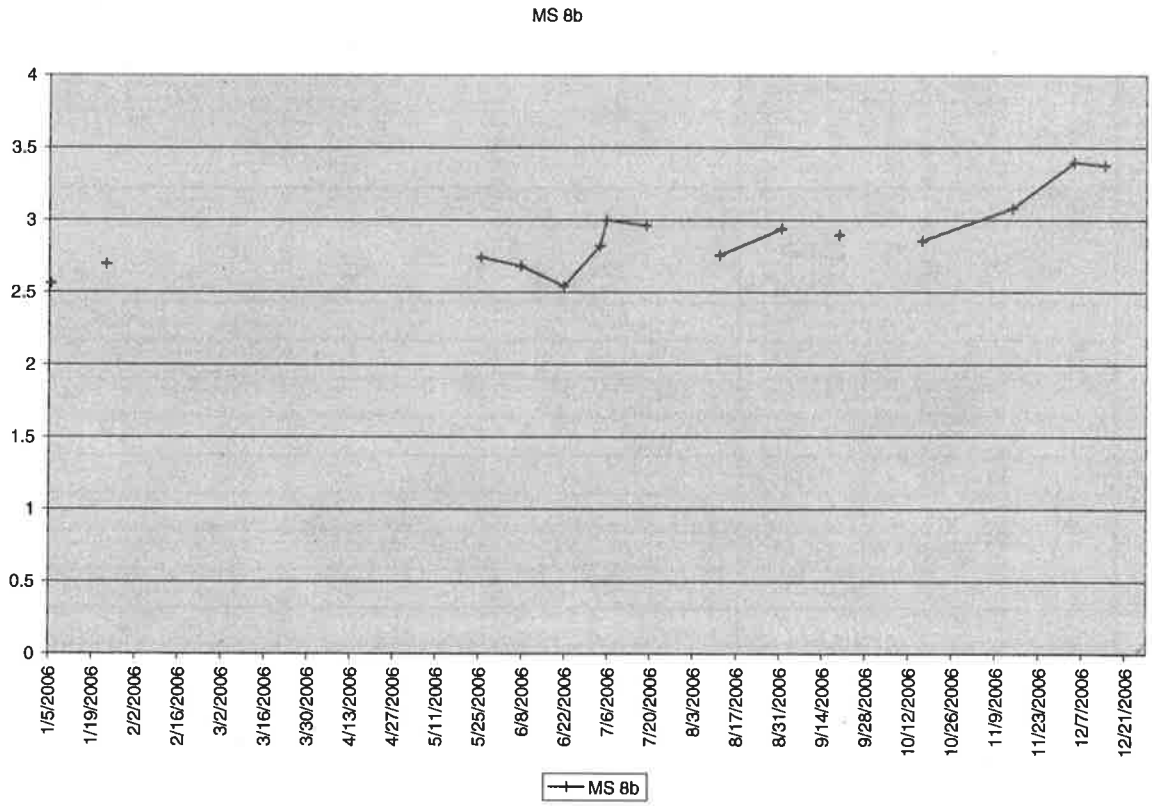
Strategies:

Management Strategy Constraints:

Unit: **Entrance Pool**

Water level guide	2007 Date	Actual Water level	Notes
	1/12	2.30	
	Mar. 23	2.30	
	Apr. 17	2.20	
	May 15	2.06	
	June 5	2.00	
	July 10	1.44	lots of arrow weed
	Aug. 2	1.10	
	Sept.		
	Oct. 9		Mudflats, water in channels.
	26	.76	" "

Unit: MSU 8B
Acres: 100
2006 Activity: No active water level management in the spring and early summer. Water was pumped in from the stump ditch pump in late august to add water to the Visitor Center ditches to flood Campbell marsh. This effort was not fully executed. Unit reached full pool in November at approximately 3.3 and then began flowing over the boards. The eagles nest in the drive through woods prevented access to the water gauge and structure from Feb. through the end of May.



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Manage against invasives and allow for more open areas in the marsh.

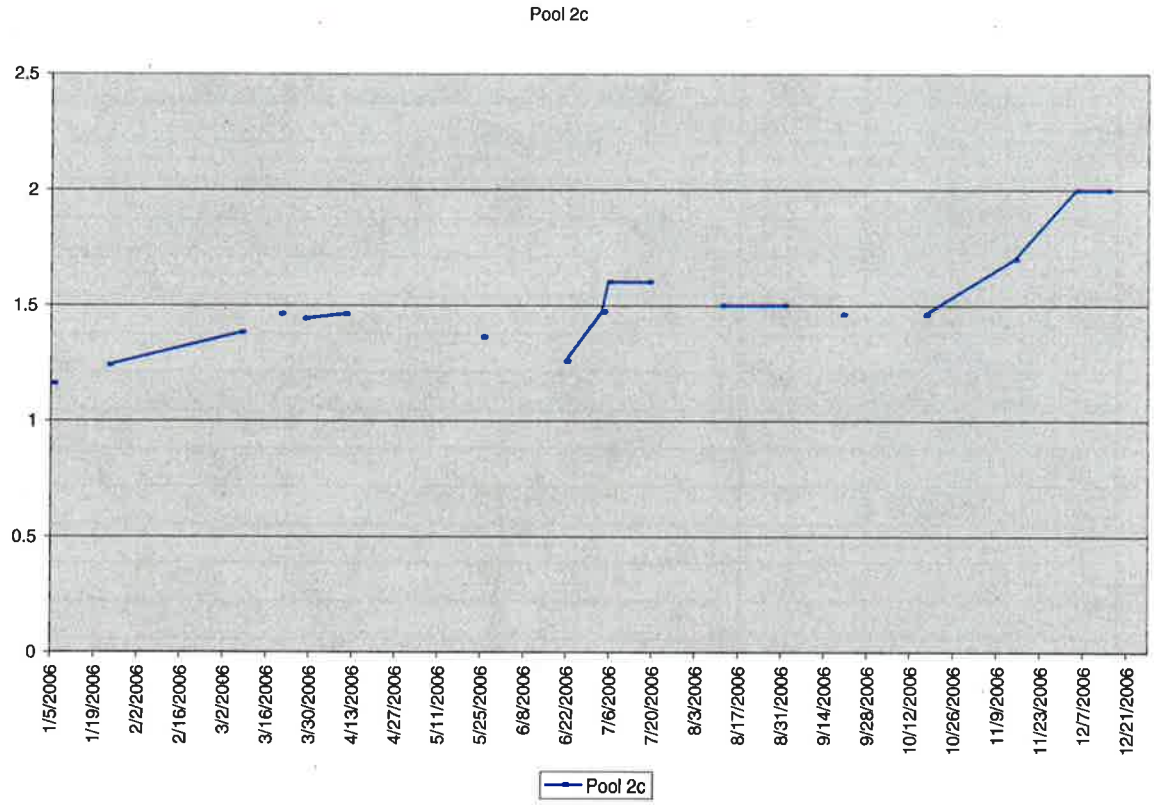
Strategies: Maintain high water levels in the spring to create openings in the marsh and combat purple loosestrife. Estimated gauge readings should be around 3.3 to put approximately 16" on unit in the spring. Water levels will fall throughout the summer to do evapotranspiration.

Management Strategy Constraints: Water levels may need to be manipulated to install a pump structure from the Visitor Center ditches into 8b as well as add an agridrain to the south east corner of the unit.

Unit: MS 8b
Full pool ~~3.3~~ 3.4 or 3.46

Water level guide	2007 Date	Actual Water level	Notes
	1/8	3.50	1/11 - 3.50 opened 4" @ 10am East gate 1/12 - closed @ 3.4
	1/16	3.50	Opened ⟳ East gate 1/18 - Closed
	Mar.		
	26	3.54	Lots of ducks (shovelers, hooded mergs, ring necks, etc.)
3.4			
	Apr.		
	May		
	June 5	2.86	
	6	2.84	Gate had been opened, so now its closed.
	July 10	2.28	
	Aug. 22	2.50	
	Sept. 4	2.30	
	Oct. 5	1.92	
	26	1.82	
	30	1.78	Turn pump on in stump ditch - filling ditch first. - turned off @ 6pm.
	31	1.78	Turn pump back on 9am. Opened to 8b 1pm
	Jan 7	2.64	SE structure - measure H_2O to top of middle brace - 31"

Unit: Pool 2C
Acres: 82
2006 Activity: No active management. The draw down in 2005 germinated a lot of purple loosestrife which was above the waters surface. The unit was aerial sprayed in 2006.



Unit Goals: Attract a variety of waterfowl, shorebirds, water birds, and wetland animals to provide opportunities for wildlife viewing. To enhance water level management capabilities, a project to ditch MS 8A and install individual stop log structures to Pool 2A, 2B, and 2C is proposed.

Objectives: Manage for hemimarsh conditions.

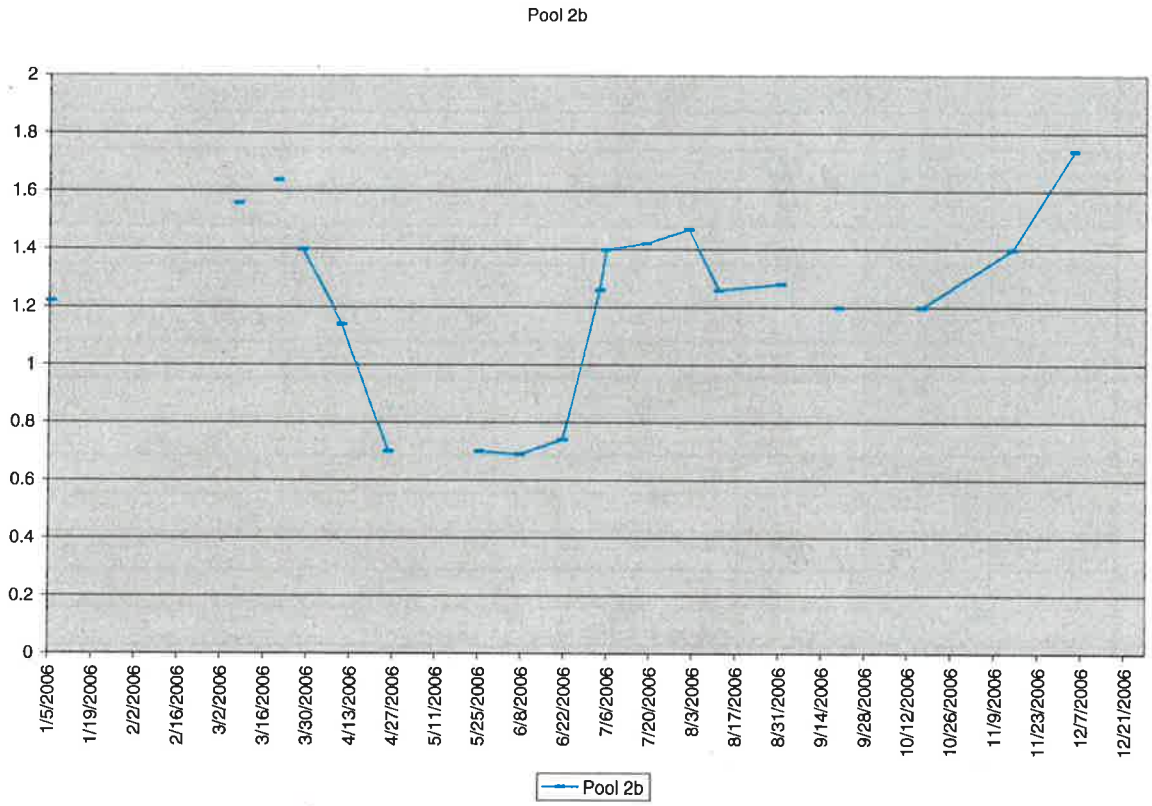
Strategies: Maintain higher water levels in the spring to stress surviving loosestrife plants (approximately 2.0). Allow for evapotranspiration.

Management Strategy Constraints: Currently there is no independent water control for this unit, unless a portable pump is used. This can be costly and needs frequent monitoring/maintenance. Refuge budget and project priority will determine water management activities.

Unit: **Pool 2c**

Water level guide	2007 Date	Actual Water level	Notes
	1/10	2.24	Opened @ 12" 3:45pm - 2.24 1/11 - closed ≈ 1.9 1/12 - 2.0
2.0	Mar. 23	2.50	
	26	2.50	Opened 9:30 am
2.0	28	2.15	Closed 4pm
	Apr. 11	2.10	
	May 15	2.0	
	June 5	1.86	
	18	1.76	
	July 10	1.52	Hairy willow herb by gauge
	Aug. 13	1.50	
	Sept.		
	Oct. 4	1.40	
	26	1.32	400+ ducks
	Dec.		Geese & swans roosting on North hole. ≈300
	Jan 7	1.90	

Unit: Pool 2B
Acres: 95
2006 Activity: Drawn down in mid march, using Thompson pump, for spring shorebirds and moist soil plants. Pumping completed by late April. Sedges germinated by late May. Rain kept the unit moist and shallow water in some areas. Water was added from 2A in June with little success. 2B too different in elevation to add significant amount of water. Reflooded unit from summer and fall rains.



Unit Goals: Attract a variety of waterfowl, shorebirds, water birds, and wetland animals to provide opportunities for wildlife viewing.

Objectives: Perennial smartweed is the dominant emergent vegetation in the unit, try to encourage more variety of vegetation. Provide areas of deep submergent wetlands for fish and invertebrates, as well as shallow emergent wetlands for wading birds and waterfowl.

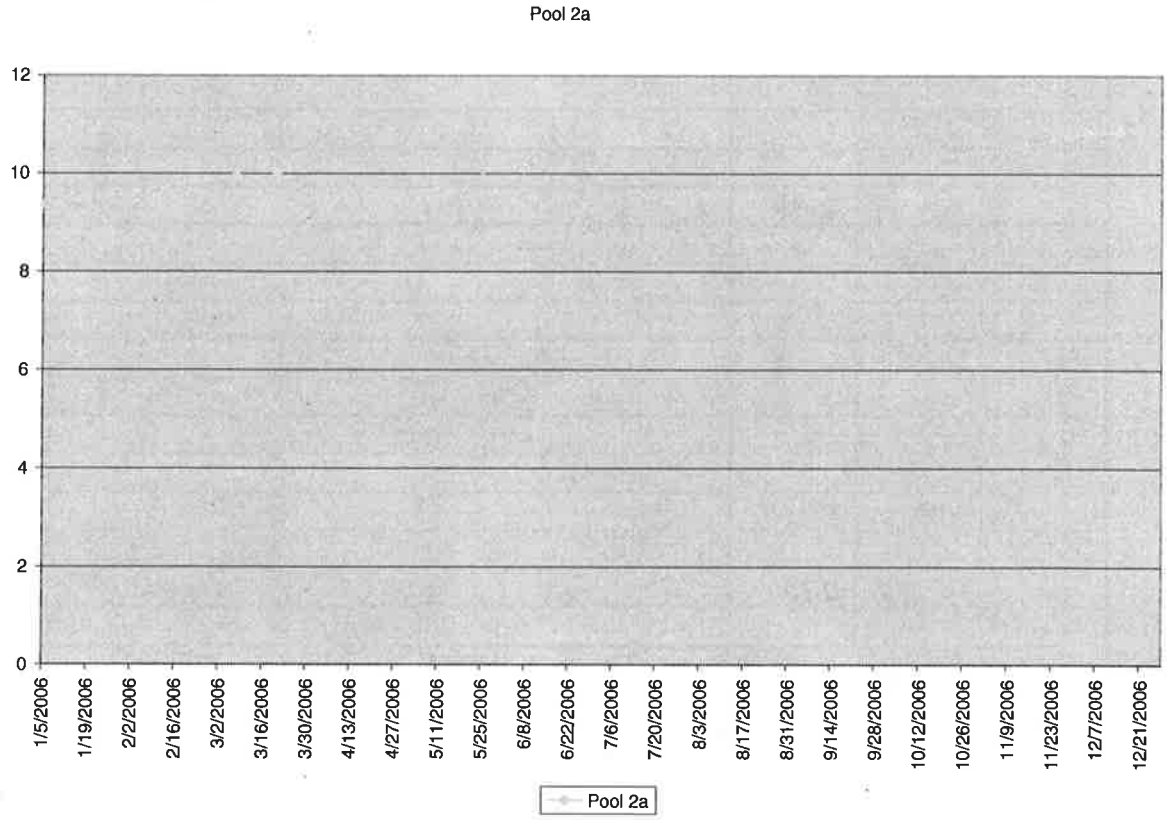
Strategies: Obtain an average depth of 12-14 inches (guage reading of 2.0). This will provide wading birds foraging habitat and discourage loosestrife. Evapotranspiration through July and August will decrease levels 6-8 inches providing shallow wetlands for fall dabbling ducks and possibly some larger shorebirds.

Management Strategy Constraints: Currently there is no independent water control for this unit, unless a portable pump is used. This can be costly and needs frequent monitoring/maintenance. Refuge budget and project priority will determine water management activities. In addition, the spring draw down in 2006 could have allowed for puple loosestrife to germinates. The unit will need to be monitored for exotics.

Unit: **Pool 2b**

Water level guide	2007 Date	Actual Water level	Notes
	1/8	2.00	
2.0	Mar. 23	2.50	
	Apr. 17	2.48	
	May 15	2.36	
	June 5	2.28	
	18	2.10	
	July 10	1.54	
	Aug. 13	1.80	
	24	2.00	
	Sept.		
	Oct. 5	1.60	
	26	1.54	300 + ducks
	Jan 7	2.10	

Unit: Pool 2A
Acres: 65
2006 Activity: Minimal water management. Water was added from 8a in late January and again in April due to high water in 8a. In order to get 2a to flow into 2b, 8a was pumped up and set to flow into 2a. This decreased 8a water levels and resulted in insignificant water level changes in 2a and 2b.



Unit Goals: Control exotic invasive plants (Eurasian watermilfoil) and willows encroaching on high ground. Attract a variety of waterfowl, water birds, wetland animals and invertebrates to provide opportunities for wildlife viewing. To enhance water level management capabilities, a project to ditch MS 8A and install individual stop log structures to Pool 2A, 2B, and 2C is proposed.

Objectives: Provide spring (April-May) shorebird habitat with shallow water along the northern part of the unit. Reflood for fall dabbling ducks, wading bird habitat, and some late shorebirds.

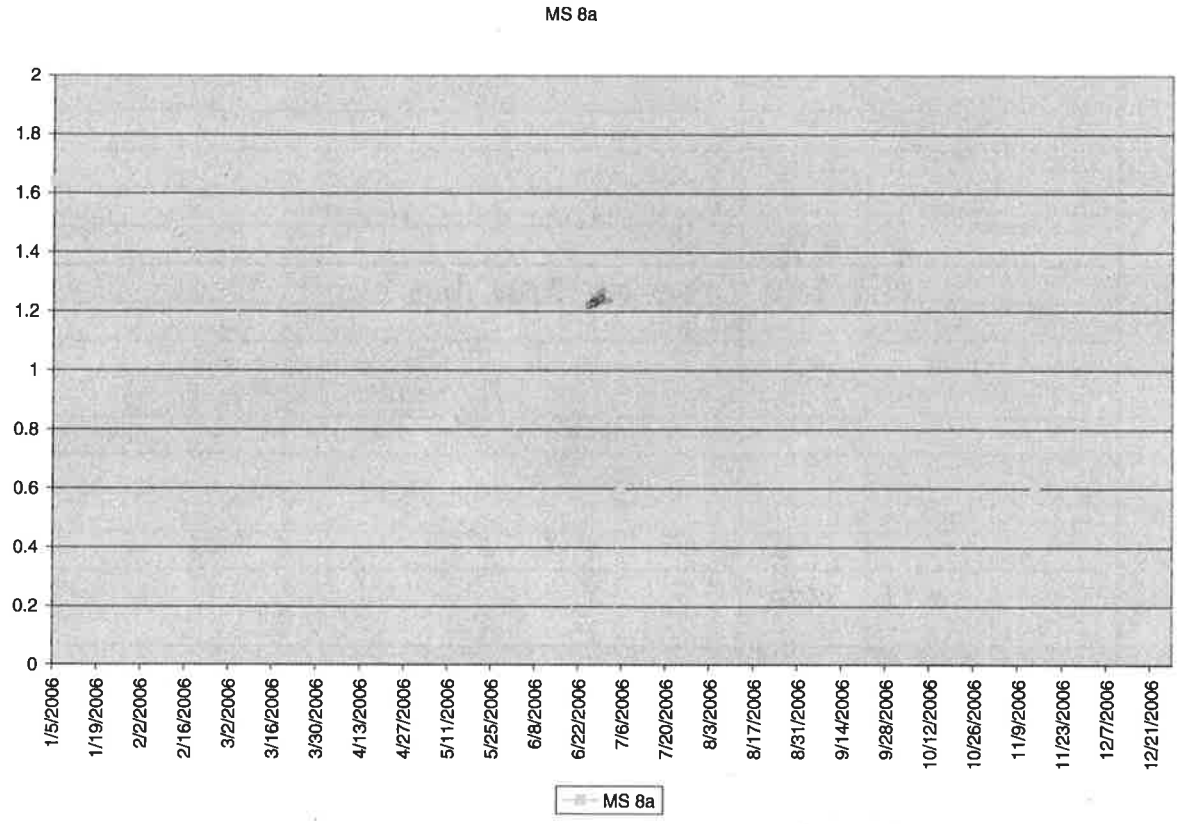
Strategies: Set Thompson pump up in mid march and begin dewatering for mudflats by second week of April. Reflood unit from 8a and possibly using Thompson.

Management Strategy Constraints:

Unit: **Pool 2a**
Majority of mudflats exposed at 7.52

Water level guide	2007 Date	Actual Water level	Notes
	1/8	1.10	
	Mar. 22	1.70	
			Begin drawdown using pumps (4ft lower!)
	Apr. 4		Begin pumping down w/ gator
	9	9.90	
	17	9.90	Pump OFF-Broke down? P1 - Pumping
	29		Pump OFF - Pump on again
	May 1	8.4	Good amount of mudflats (40%-50%). Rest is "hmm" deep. 12-18". 30 yellowlegs, 10 pectoral sand.
	15	7.66	Unable to pump any more. - Good shorebird use - 300-400 dunlin, a few spotted sandpipers, yellowlegs, & semipalmated plovers. 90% mudflats
	June 5	8.16	
	18	7.80	
	July 10	7.86	
8.166	23		Begin reflooding in coordination w/ Sa d.d.
	25	8.24	Closed
	Aug. 13	8.1	
	24	8.36	
	Sept. 4	8.18	Veg looks great! lots of nodding smartweed & some millet & sedges
	Oct. 5	8.04	
	26	7.90	
	30	7.86	Opened to SA (flooding) closed @ 4:30
	31	7.90	Opened to SA " " " thru Nov 2
	Nov 6	8.04	500 ducks 13- 8.08
	12/18	8.80	
	Jan 7	8.80	

Unit: MSU 8A
Acres: 56
2006 Activity: Water was let out in the spring into 2a due to rains resulting in high water levels in 8a. In June, 8a was pumped up and opened to 2a, which was open to 2b for reflooding 2b. This was unsuccessful b/c 2b's elevation is much higher than 2a. 8a's water dropped significantly, with pumping making little impact in late June. Late summer rains increased unit water levels.



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Encourage marsh vegetation and invertebrates. Provide fall shorebird habitat.

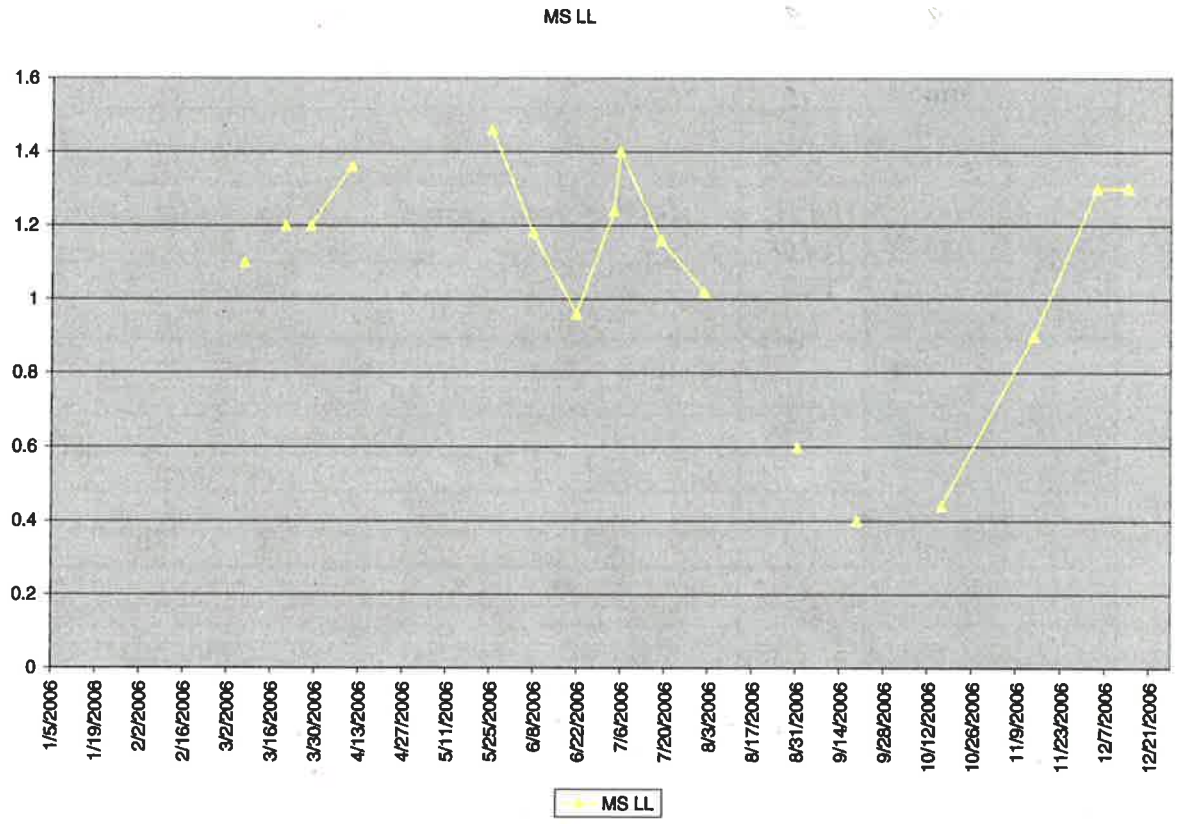
Strategies: Manage water levels for full pool in the spring, with a gradual decrease throughout the summer. Dewater in late July for fall shorebirds. Possibly add water in September for dabbling ducks. Raise catwalk during drawdown and possibly inspect pump.

Management Strategy Constraints:

Unit: **MS 8a**

Water level guide	2007 Date	Actual Water level	Notes
	1/8	1.18	1/10 – 1.20 Opened 10" 9:20am, Closed – 3:30pm @ 1.10
	1/11	1.10	Opened 9:00am. closed 3:15pm @ 0.90
	~~Mar.~~ 1/16	1.10	
	8/22	1.80	
	3/26	1.82	Opened 10" 9:15am (ditch opened 21")
	27	1.38	1.24 @ 4pm closed 28 – 1.20 closed
1.2	Apr. 9	1.10	
	17	1.10	
	May 1	1.20	
	15	0.98	
	June 5	0.91	
	July 10	0.38	
	17	0.18	Pump turned on
	18	0.30	19 – 0.44 Pump off – belt smells hot & lots of shavings
.8-1.0	23	0.38	Pump on & fixed belt. 24th → 0.20 27 – OFF 0.54 – belt needs work
	Aug. 1	0.78	Pump OFF
	13	0.90	
	24	1.10?	Dirty Opened 4" to ditch
	Sept. 4	0.76	
	Oct. 5	0.46	
	24	0.38	
	30	~~0.36~~	Pump on in AM/OFF in PM Oct. 30 – Nov. 2 also flooding 2A
	Nov 7	0.20	Pumped in AM/OFF in PM → Belt needs tightened. Only pumping 8A
	8	~~0.26~~	Belt tightened & pump on in AM/OFF in PM → 0.28
	13	0.30	Pump On AM 14 Pump OFF PM → 0.40 ditch too low
	15		Pump On-AM – OFF in PM
	12/18	1.16	
	Jan 7	1.20	

Unit: MSU LL
Acres: 27
2006 Activity: New water gauge installed. Excessive water was taken off in May and throughout the year to prevent high water in drive-through (north) woods.



Unit Goal: Maintain unique refuge habitat and native plants. Provide foraging and nesting habitat for migratory birds.

Objectives: Maintain marsh conditions.

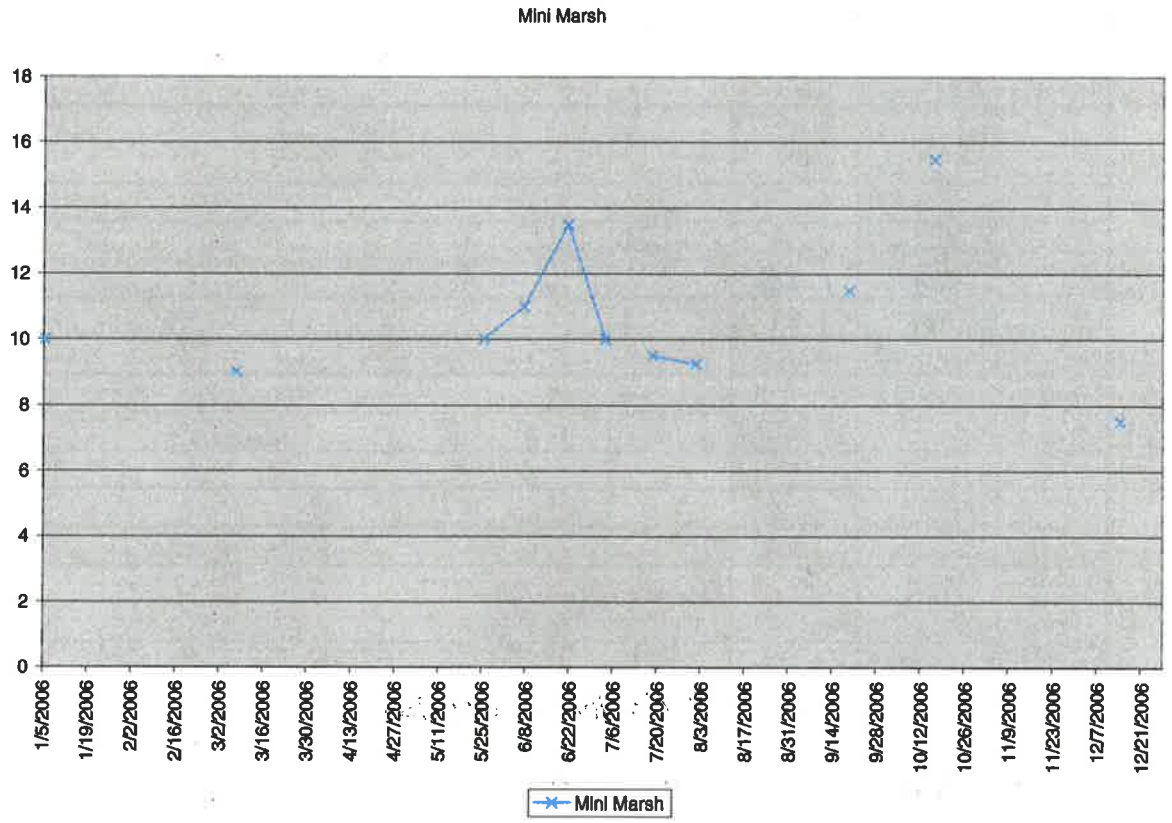
Strategies: Allow full pool in spring and evapotranspiration throughout the season.

Management Strategy Constraints: Unit floods easily from rains, resulting in dramatic water level changes. Approximately 1.3 unit floods north woods.

Unit: **MS LL**

Water level guide	2007 Date	Actual Water level	Notes
	1/8	1.50	1/10 – 1.50 Opened ≈ 6" 9:20am Closed 3:30pm @ 1.40
	1/11	1.40	Opened 9:00am closed 3:15pm @ 1.3
	1/16	1.54	
	3/22	2.00	
	3/26	1.96	Open full 9am
1.30	3/27	1.64	
	3/28	1.18	Closed 9am
	4/9	1.28	
	4/~~17~~	1.34	
	~~4/23~~ 5/1	1.56	
	5/15	1.38	
	6/5	1.34	
	7/10	0.38	
	7/17	0.08	
	7/27	5	below gauge
	8/13	0.28	
	8/24	0.82	
	9/1	0.50	→ No H2O in woods.
	10/15		Below gauge
	10/26		" "
	12/19	1.0	snow + ice
	Jan '7	1.20	

Unit: Mini Marsh
Acres: 30
2006 Activity: Minimarsh is used as a holding tank to pump up blind 93 in the fall. During this time water levels fluctuate highly until pumping is finished.



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Maintain as hemi marsh.

Strategies: Possibly conduct spring burn.

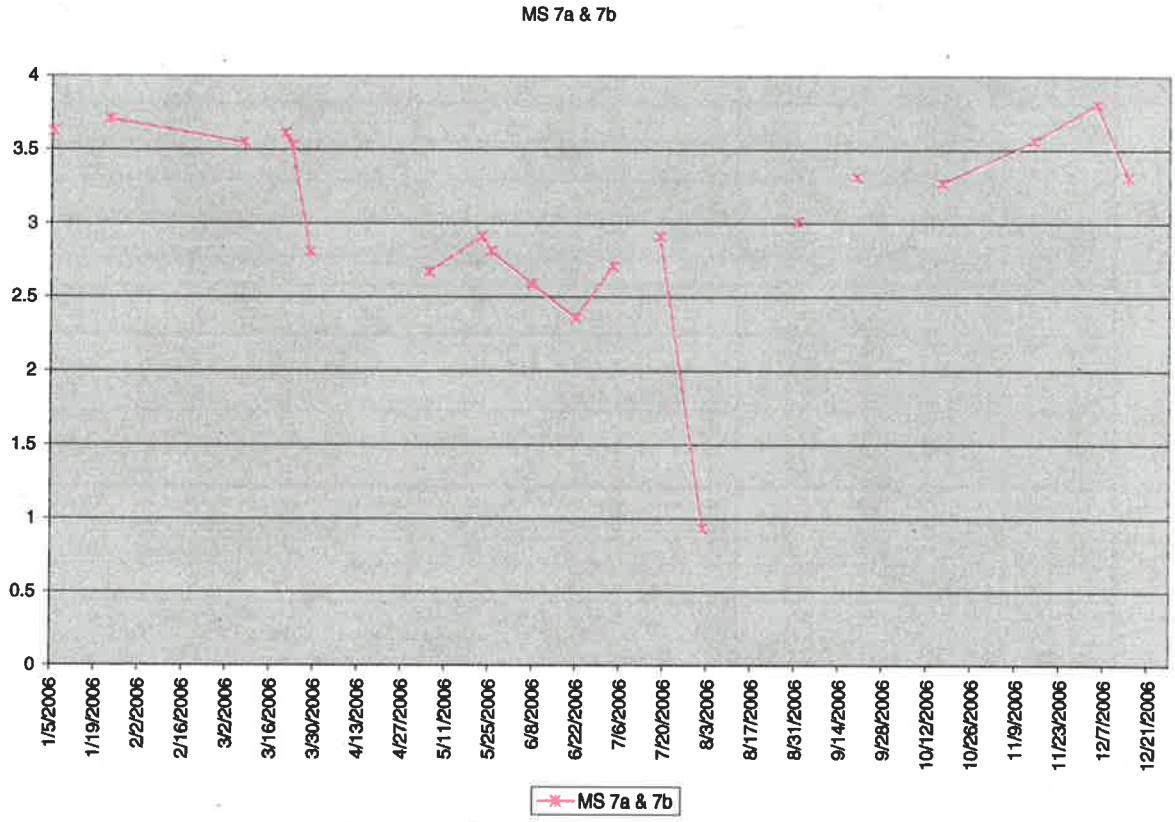
Maintain flooded optimum pool, with maximum water levels at 10" and minimum at 8"

Management Strategy Constraints:

Unit: **Mini Marsh**
Measure from waters surface to top of splitter box. If water in unit gets much higher than half way up the side of the discharge pipe, water leaks through splitter box to Crane Creek. Needs new flap gate.

Water level guide	2007 Date	Actual Water level	Notes
	1/11	≈ 6"	
	Mar.		
	26	≈ 6"	
[redacted]			
	Apr.		
	May		
	June		
	July 10	18"	
	Aug. 13	19½"	
	Sept.		
	Oct.		
	Jan 7	13"	

Unit: MSU 7A & 7B
Acres: 94
2006 Activity: **The unit** was set to free flow into crane creek in march. High lake levels prevented free flowing water out from the ditches in 7. High ditches and summer rains prevented the high ground in 7a from completely drying out to do any mechanical work in early spring. Some spraying of flowering rush and reed canary grass was done w/ the marsh master. Mid July the unit was dry enough to mow and disk the south west corner. Late August the unit was reflooded by electric pump.



Unit Goal: Provide migratory bird foraging and resting habitat. In addition the transitional areas on 7B will allow for easily accessible upland habitat for nesting as well as provide a gradient of water levels.

Objectives: This unit is shallow and can provide good annual plant production and emergent wetland habitat. Manage water levels against invasives.

Strategies: Maintain full pool and treat invasives.

Management Strategy Constraints:

Unit: **MS 7a & 7b**

Water level guide	2007 Date	Actual Water level	Notes
	1/3	3.48	
	1/8	3.60	1/10 – 3.58 Opened 7" 9:35am Closed 3:20pm @ 3.48
	1/11	3.50	Opened 9:15am Closed 3:30pm @ 3.40 1/12 – 3.44
	Mar. 23	3.83	
	26	3.82	Opened 7" Closed to ≈ 4" 4:30pm @ 3.72
3.3 – 3.5	27	3.52	Closed 8am
	Apr. 17	3.46	
	May 15	3.3	Fabulous bird use this spring by all types of bird
	June 18	3.04	
	July 2	2.94	- Most of unit saturated soils.
	10	2.60	
	26	2.30	- Pumping in 8:45pm 27 – [illegible] 2.56 3pm – 2.54 OFF (7/27)
	31	2.60	7/30 – Pump On
	Aug. 2	2.70	Pump OFF
	13	2.90	
	Sept. 5	2.98	
	9/17		Pumping Up – Pump problems, new pump installed
	Oct. 4	~~[illegible]~~ 3.4	Pump OFF
	16	3.38	
	30	3.34	
	Nov 8		Pump turned on in AM / OFF in PM → 3.30

13 3.32 → Pump on/OFF in pm

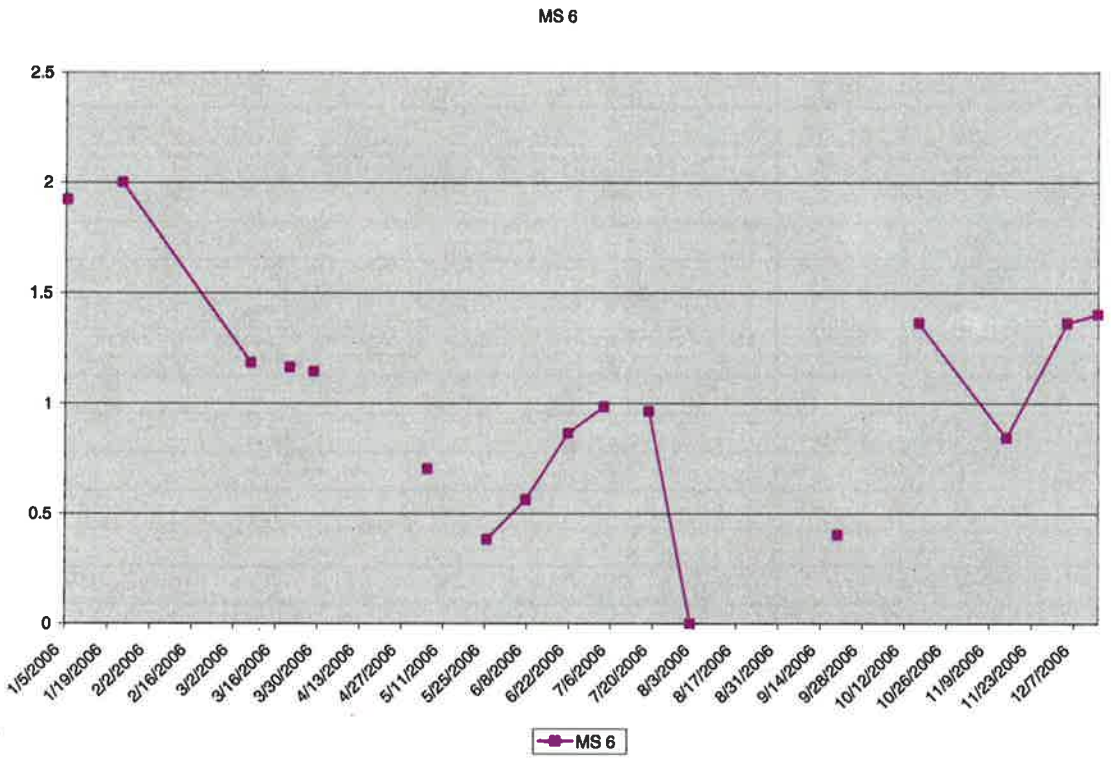
15. 3.38 → Pump on/am OFF in PM

Dec 3 3.61

12/18 3.80?

Jan 7 3.86 500 geese in 7A North side

Unit: MSU 6
Acres: 70
2006 Activity: The gate in the MS pump structure came off track and leaked through the MS ditch structure. The structures were not fixed until August and the unit was reflooded. The accidental draw down provided late summer/fall shorebird habitat. The unit was used to reflood FU6 in September. The MS ditch gate still leaky.



Unit Goal: Provide foraging and resting habitat for migratory birds as well as brood habitat.

Objectives: Manage for hemimarsh conditions.

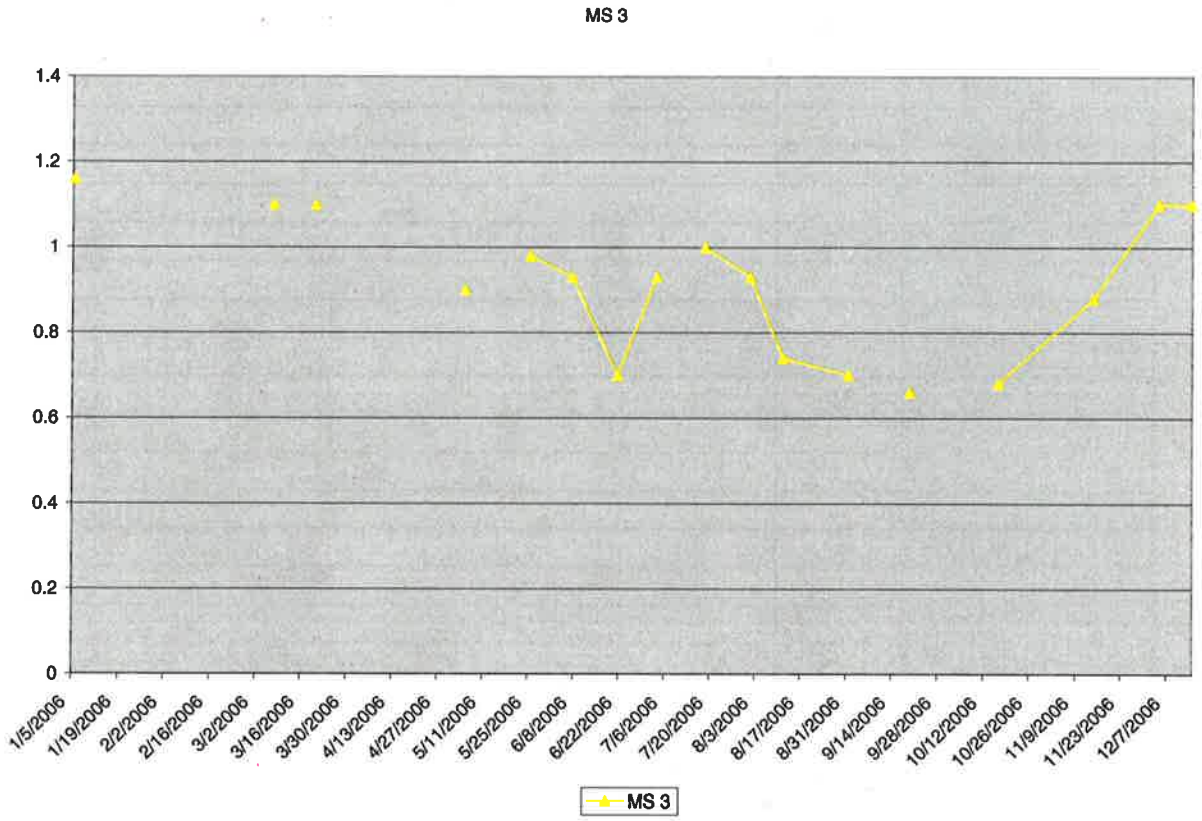
Strategies: Last years natural draw down is suspicious. Watch the unit carefully in 2006 to inspect for leaks. If water gets too low, add water. May levels should be around 1.5 on gauge, keep levels above 0.5

Management Strategy Constraints:

Unit: **MS 6**

Water level guide	2007 Date	Actual Water level	Notes
	1/3	1.50	Windy
	1/8	1.60	1.10 – 1.60 Opened 4" 9:50am Closed 3:20 @ 1.60
	1/11	1.50	
	Mar 22	2.00	
	Apr. 17	1.90	
	May 15	1.80	
	June 5	1.74	
	18	1.54	
	July 10	1.28	
	23	1.16	Pump on 10:30am OFF 4pm (Pumping into MS ditch)
	24	1.20	Pump on 10:00am Closed 4pm 1.30
1.5–1.8	27	1.40	(Rain)
	Aug. 15	1.32	
	Sept. 5	1.30	
	26		Pumping unit up to Flood FU6
	Oct. 9	2.40	
	Nov 1	2.25	1200 + ducks good for birds, load on dikes. H_2O in muskrat holes on top of East side. High on South dike as well – R.H. report.
	14	2.20	
	Dec 3	2.40	Letting H_2O out.
	4	2.20	Closed 3:30pm
	Jan 7	2.00	

Unit: MSU 3
Acres: 225
2006 Activity: No active management. The gate into the MS ditch leaked a little in August, but has stopped.



Unit Goal: Provide a nesting and feeding area for migratory birds as well as brood habitat.

Objectives: Maintain as hemi marsh. Provide emergent and submergent marsh habitat for waterfowl, swans, and rails.

Strategies: Maintain flooded optimum pool.

Management Strategy Constraints:

Unit: **MS 3**
(when filling, open 24" gates all the way, 36" gate on ditch open only 1')

Water level guide	2007 Date	Actual Water level	Notes
	1/3	1.20	1/8 — 1.30
	Mar. 23	2.10	
	Apr. 17	2.06	gauge crooked
	May 15	1.94	
	June 07	1.80	
	18	1.66	
	July 10	1.40	
	16		Knee deep in ditch along N dike → flowering rush in flower 75 ankle deep.
	Aug. 1	1.20?	Muddy - gauge leaning
	24	1.50	
	Sept.		
	Oct. 9	1.00	2.3"
	Nov 1	.92	
	13	.90	~~4½"~~ (4½") should be 33" needs 8". Gauge use to equal 1.0 @ 33".
	Dec 3	1.23	34.2

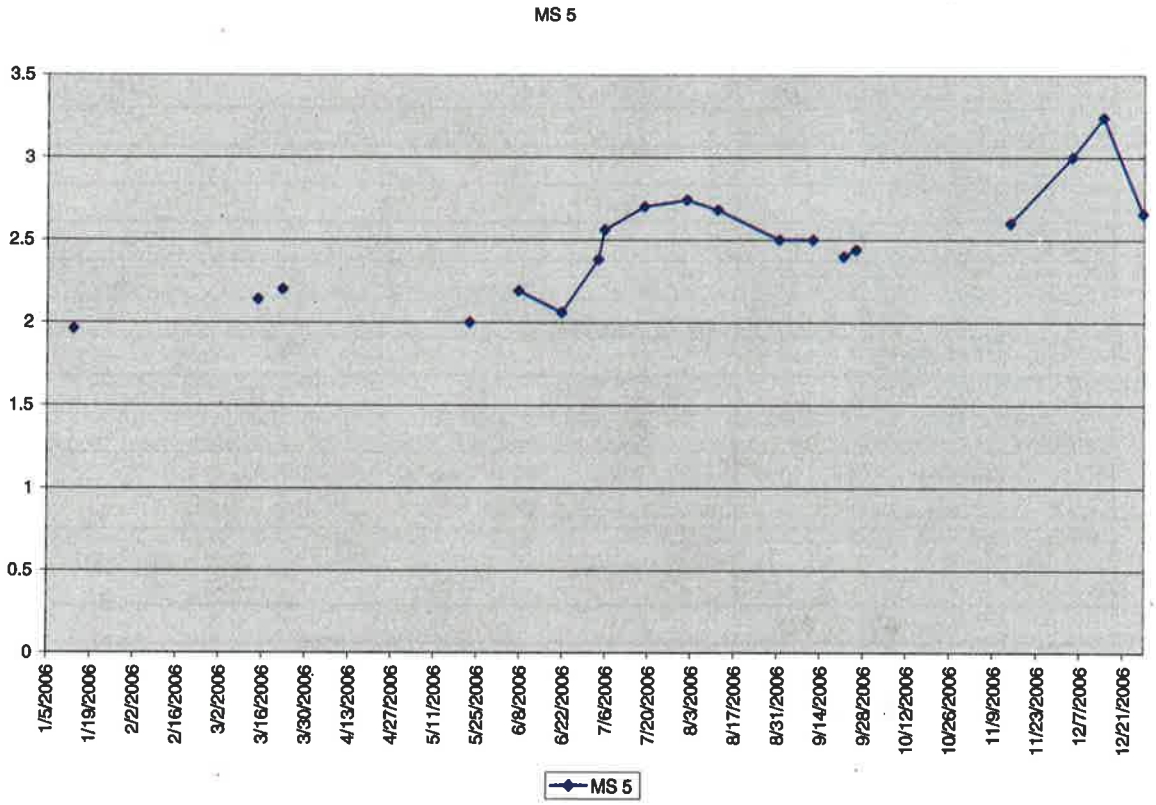
MS Pump turned on 11/13 @ noon. Filling ditch to add H2O to MS3+4.
turned off @ 4:20pm.

11/15 Pump on in AM. OFF in PM Low lake levels. Can't Pump. Cancel Flooding

12/18 1.46

Jan 7 1.40

Unit: MSU 5
Acres: 256
2006 Activity: The MS pump was used to increase low water levels in June. The structure into the MS ditch is leaky.



Unit Goal: Provide a resting and feeding area for migratory birds.

Objectives: Repair west dike.

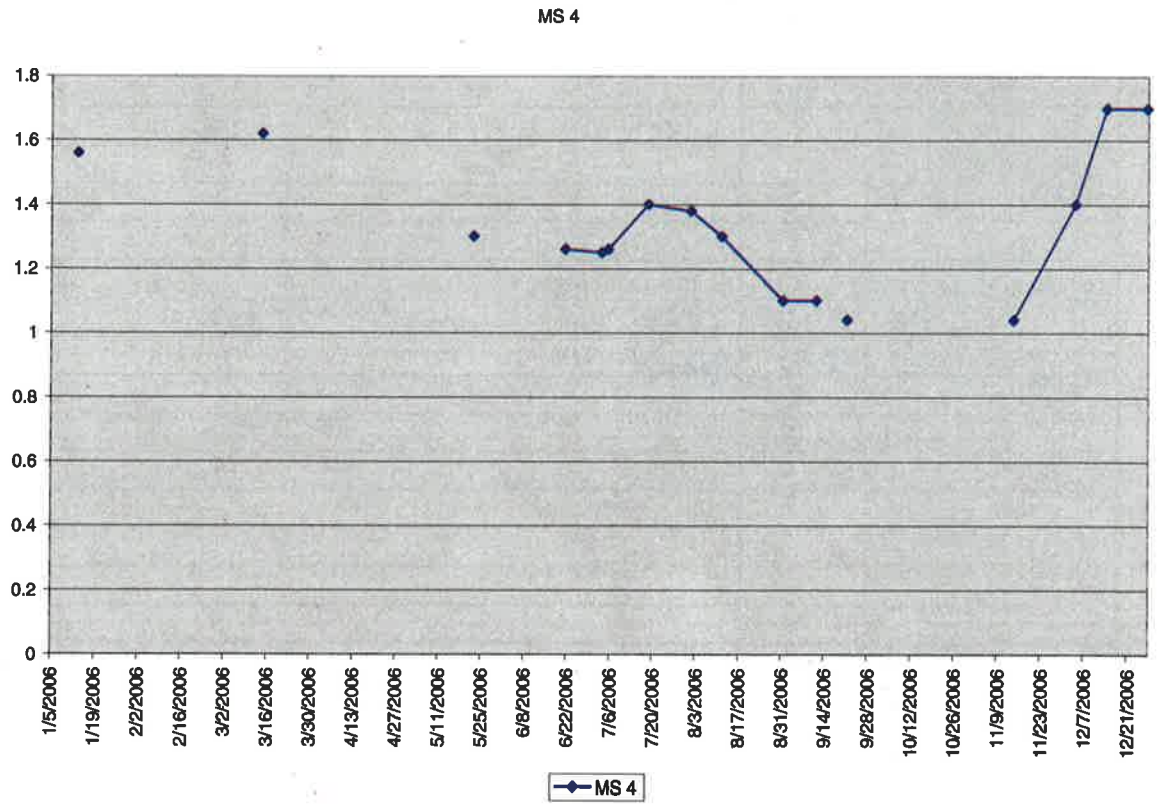
Strategies: Draw down water level depending on timing of construction and possible wildlife benefits. Treat and monitor invasives. Avoid early draw down if possible

Management Strategy Constraints:

Unit: **MS 5**

Water level guide	2007 Date	Actual Water level	Notes
	1/3	2.76	
	1/8	2.84	
	1/11	2.90	leaking into ms ditch
	Mar. 23	3.20	
	26	3.18	Opened 7" 10am
	27	3.08	Opened to 10" 9am
2.70	28	3.08?	Windy AM. closed 1:00pm
	Apr. 9	2.90	Opened 4"
	12	2.70	closed.
	17	2.70	
	May 15	2.50	
	June 7	2.46	
	14	2.38	
	July 10	2.06	
	24	2.00	Pumping in 4pm 26 - 2.20
	27	2.44	Closed 8:38pm 31 - 2.40
2.3-2.5			
	Aug. 15	2.44	
	24	2.70	
	Sept.		
	Oct. 9	2.20	Leaking into MS ditch
	16	2.16	
	Nov 1	2.12	
	13	2.10	
	Dec 3	2.30	
	18	2.60	
	Jan 7	2.62	

Unit: MS4
Acres: 112
2006 Activity: No active water management.



Unit Goal: Provide a nesting and feeding area for migratory birds as well as brood habitat.

Objectives: Repair east dike/road.

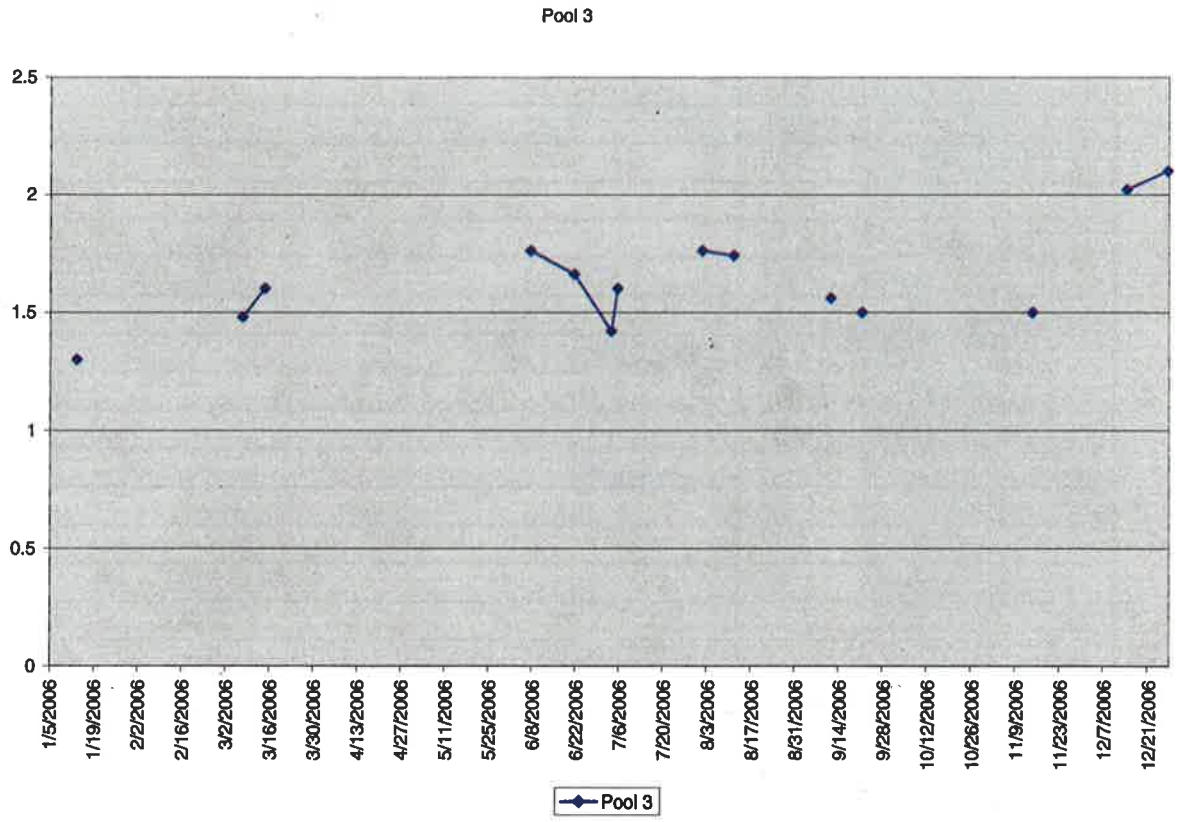
Strategies: Draw down early to discourage trumpeter swan nesting. Treat invasives.

Management Strategy Constraints:

Unit: **MS 4**

Water level guide	2007 Date	Actual Water level	Notes
	1/3	1.80	
	1/8	1.90	1/10 - 1.90 Opened 7" (west gate) 10:45am Closed 3:10pm @ 1.80
	1/11	1.80	
	Mar. 23	2.10	
	26	2.10	Opened 10" 10am (watch for optimal level)
1-1.5	27	1.90	9am Opened other gate 7"
	28	1.58	closed
1.0	Apr. 17	1.48	Open 4" 3pm
	18	1.40	
			Closed.
	May 15	1.06	
	June 7	0.90	
	13	0.80	lots of rush, but more diversity than last year
	July 10	0.20?	Dirty Very low - ~~to~~ ≈ 30- yellowlegs
	16		Sat. soils.
	23	0	Opened 1 Foot Pumping in MS ditch - Top of line 6 10:30 am
		0.40	Closed 4:00 27- 0.50 31- 0.80
	Aug. 15	0.52	
	24	0.86	
	Sept.		
	Oct. 9	0	below gauge
	Dec 3	0.70	Open to MS ditch/ditch high ↑ the rest
	4	0.78	Closed.
	18	1.0	
	Jan 7	1.16	

Unit: Pool 3
Acres: 240
2006 Activity: No active management.



Unit Goals: The primary objective of this unit is to provide food resources and resting cover for migratory waterfowl, waterbirds, nesting Bald Eagles and other wetland animals. In addition water levels are managed to encourage native wetland plants and discourage exotic invasive species.

Objectives: Manage for hemi marsh conditions.

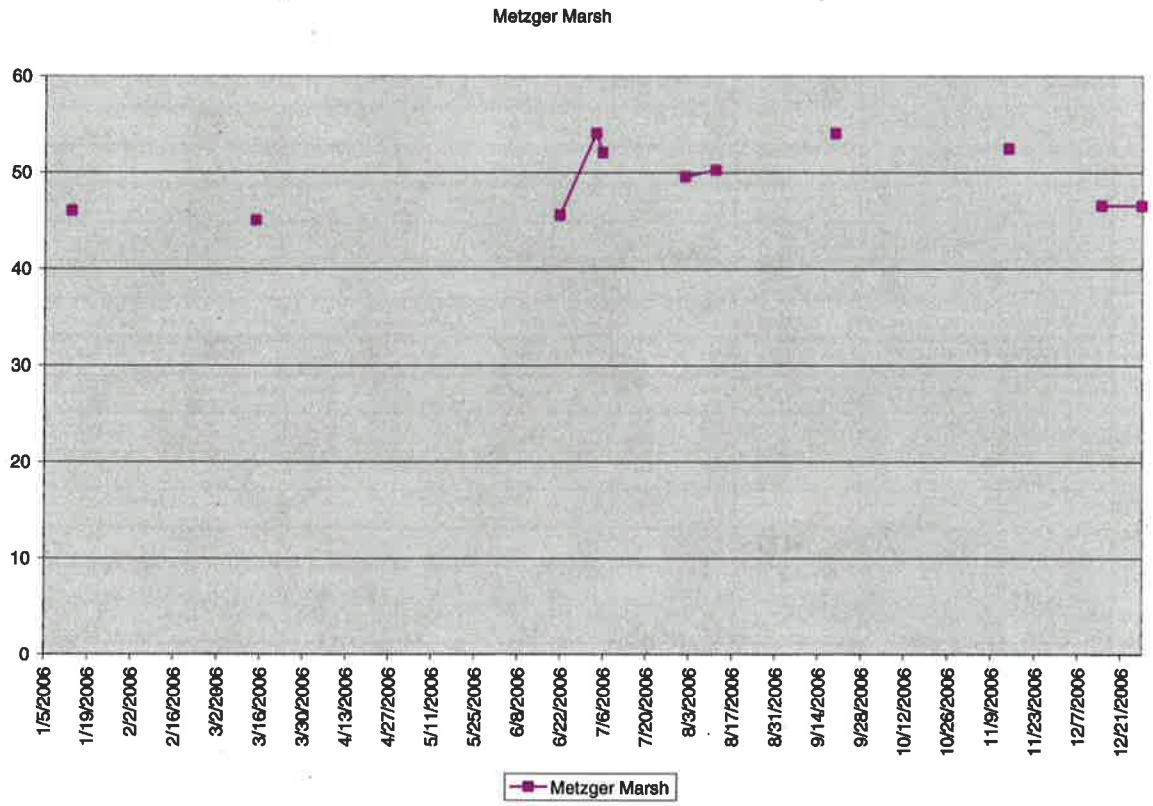
Strategies: Maintain high water levels so that the west end has deeper water. Realize that evapotranspiration could decrease spring water levels one foot by October.

Management Strategy Constraints:

Unit: **Pool 3**

Water level guide	2007 Date	Actual Water level	Notes
	1/3	2.20	1/10 – 2.36
2.4	Mar. 23	3.3	Top of white part of gauge
	Apr. 19	3.3	Same
	May 15	3.28	
	June 7	2.90	
	July		
	Aug.		
	Sept.		
	Oct. 9	2.80	
	Nov 1	2.46	
	12/18	2.48	
	Jan 7	3.60	

Unit: Metzger Marsh
Acres:
2006 Activity: Closed to the lake to maintain high water levels to control Phrag. The channel into the unit filled in with sand and shells. A contractor was hired to clean out the channel.



Unit Goal:

Objectives:

Strategies:

Management Strategy Constraints:

Unit: **Metzger Marsh**
Measure from waters surface to top of lower platform on unit side. Maintain full pool for control of invasives.

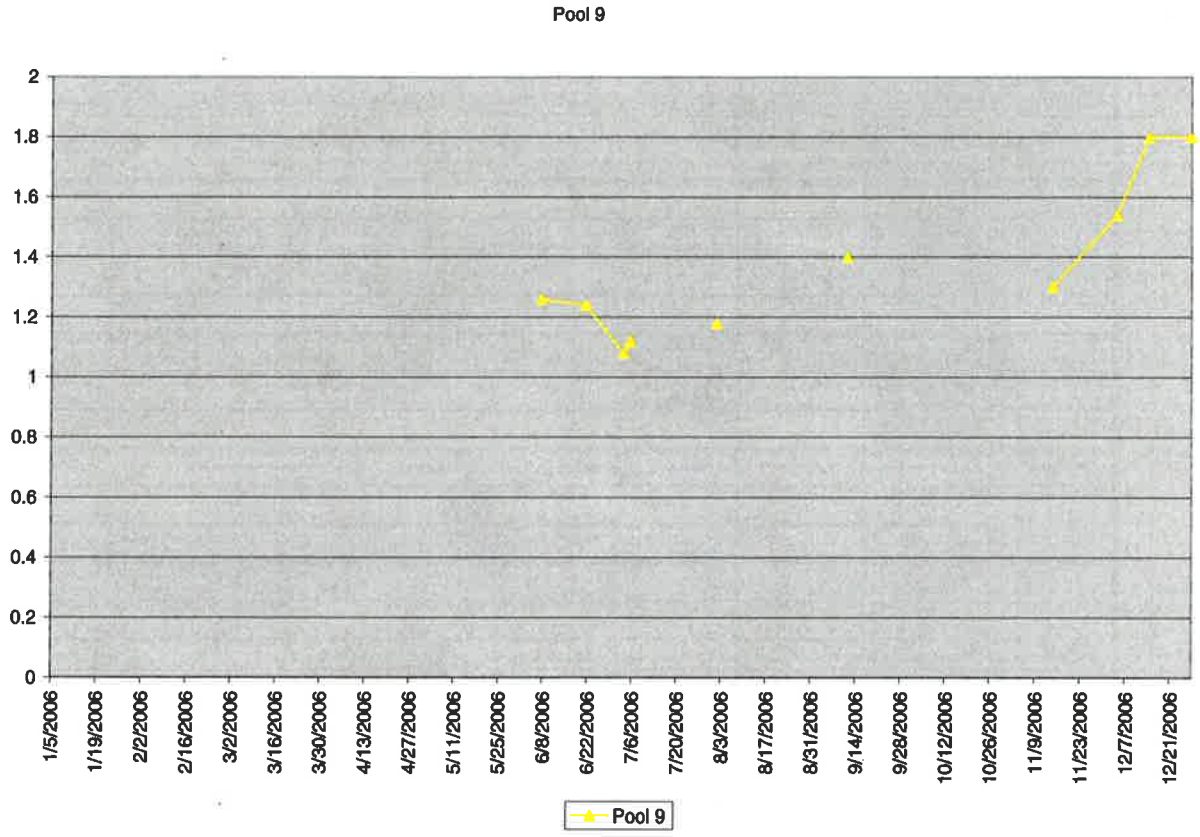
6-8" lower

Water level guide	2007 Date	Actual Water level	Notes
	Mar. 22		Opened 1 gate ½ way (East gate) -
	23	51½"	Pat says it has dropped 6-8"
	Apr. 17		Open
			Pumping down
	May 15	85"	No Pumping - Majority mudflats. Excellent Shorebird use all spring
	June 7	.18	.18
	July 10	84"	.36
	23	86½"	.20
	Aug.		
	Sept.		
	Oct 9	53	3.24
	Jan 7	51"	3.18

Unit: Pool 9 East

Acres: 77

2006 Activity: The unit was burned in late April and flooded with portable pumps a couple weeks after. A new gauge was installed. Reed canary grass was sprayed with the marsh master.



Unit Goals Provide resting and foraging habitat for migratory birds.

Objectives: Manage for hemi marsh conditions.

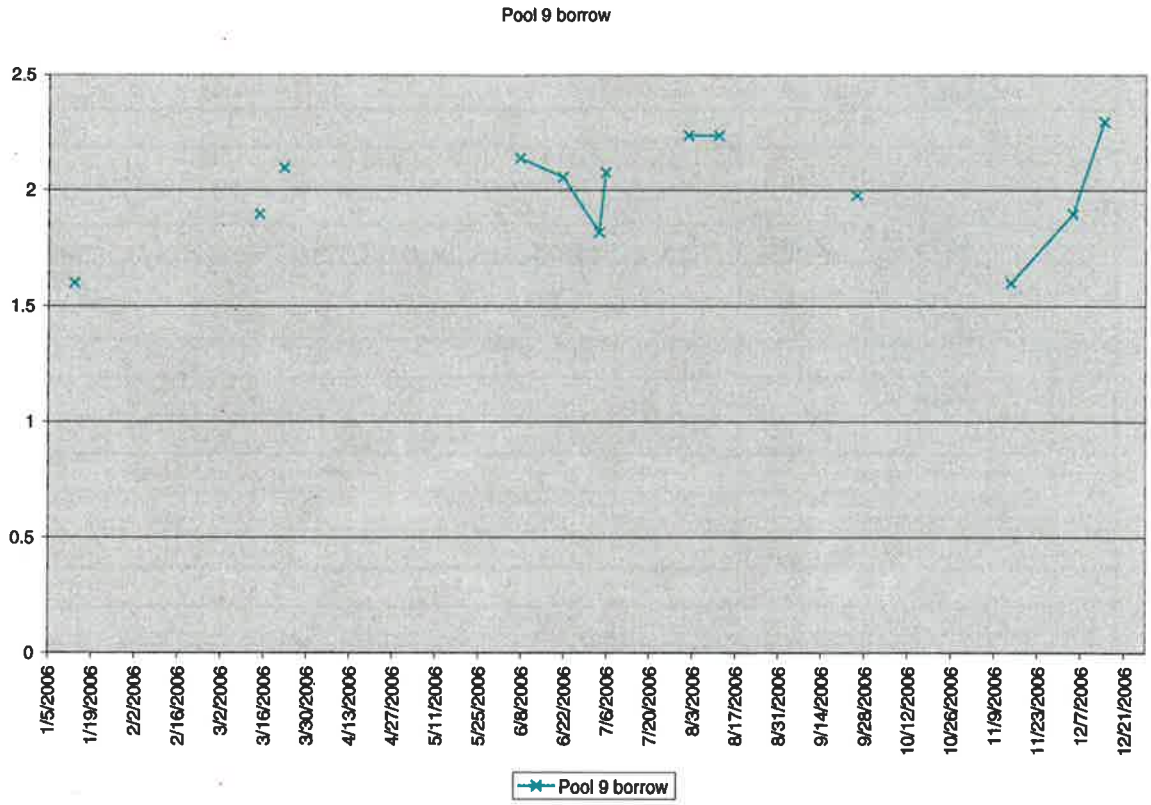
Strategies: Maintain full pool.

Management Strategy Constraints:

Unit: **Pool 9 east**

Water level guide	2007 Date	Actual Water level	Notes
	1/3	2.00	1/8 – 2.08
	Mar. 23	2.50	
	Apr. 17	2.42	lots a coots in berms area by gauge ≈ 200
	May 15	2.3	
	16	2.38	(rain night of 5/15)
	June 7	2.26	
	13	2.18	
	July 10	1.84	
	Aug. 15	1.76	
	Sept.		
	Oct. 16	1.58	Some areas exposed gravel
	Nov 1	1.55	
	12/18	2.00	
	Jan 7	2.10	

Unit: Pool 9 borrow area
Acres: 38
2006 Activity: High water was taken out in the fall by free flowing through the pump structure.



Unit Goals: Provide habitat for waterfowl, wading birds, and shorebirds. Provide public use waterfowl hunting opportunities.

Objectives: Obtain 19 acres of deep to shallow submergent vegetation and 19 acres of deep to shallow emergent vegetation. Control Eurasian watermilfoil. Maintain 3 water blinds for waterfowl hunting season.

Strategies: Manage spring water levels to read approximately 2.0-2.4 in the spring. Evapotranspiration will decrease water levels no more than 12" by fall. This will still provide adequate hunting access.

Management Strategy Constraints:

Unit: **Pool 9 borrow area**

Water level guide	2007 Date	Actual Water level	Notes
	1/3	2.60	1/10 – 2.76 Opened @ 14" 3:00pm 2.70 1/11 – 2.40 @ 8:40pm
	1/12	2.20	@ 1:40pm
	Mar. 23	2.80	
	26	2.80	Opened 10"
1.5	28	2.1	9:30am closed to 4"
	Apr. 4	2.0	Windy 7 – 1.6 Closed
	17	1.70	
~~20~~	May 15	1.68	
	June 7	1.64	pied billed grebe saw, Lesser scaup
	13	1.56	Western edge, not much diversity (veg). Cattail + H_2O. Eastern side is better. Perhaps lower levels for next year.
	July 10	1.38	
	18	1.08	Pump on – 182 59 hrs 8:45am
	19	1.16	Rain 18 50.0 8:48 am 20 – Pump off
	23	1.10	Pump on 25 – 1.26 27 – 1.56 closed
	Aug. 15	1.48	
	24	1.80	
1.2-1.6	Sept.		
	Oct. 9	1.38	
	16	1.38?	atleast 12" short of blind 12, w/ some areas 3ft.
	Nov 1	1.33	
	13	1.38	
	12/18	1.92	
	Jan 7	2.08	

Unit: **FU 6**
Full pool 1.9
If pump FU6 up through MS ditch, start sooner and only run pump in the day.
In 2006 (wet year) only took 1 week to fill.

Water level guide	2007 Date	Actual Water level	Notes
	1/8	2.00	d.d ⟳ thru ms ditch – finished 1/17
	Mar.		
	Apr.		
	May		
	June		
	July		
	Aug.		
	Sept.		
	25		Begin flooding hunt unit
	26		Pumps on. Ditches already Full. Pumping thru MS ditch & MS6.
	3	1.70	Closed MS ditch. H2O leaking into FU2 & out. 10/5 Pump OFF 1.80
~~1.90~~	Oct. 6		Youth Hunt
	9	1.76	
~~1.90~~	16	1.72	
1.7-1.8	Nov 13	1.70	
	27	1.94	Probably too hig
	Jan 7		letting H2O out

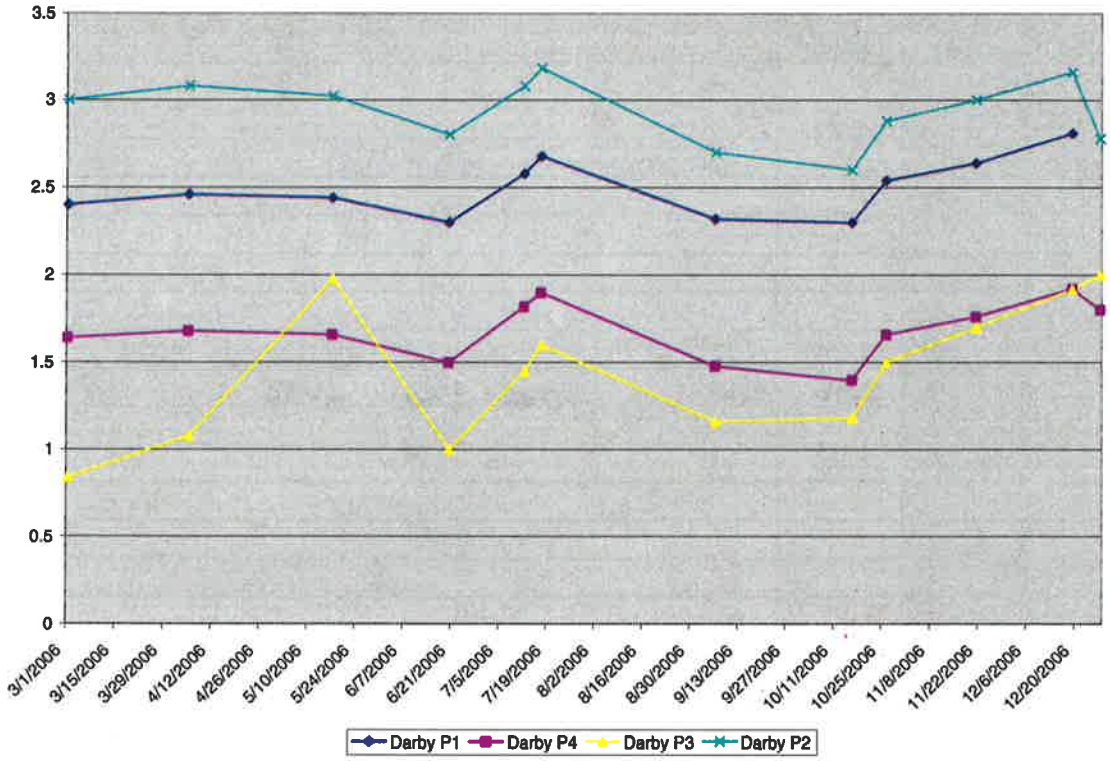
Unit: **FU 2**

Water level guide	2007 Date	Actual Water level	Notes
	1/8		d.d.
	Mar.		
	Apr.		
	May		
	June		
	July		
	Aug.		
	Sept.		
	Oct.		
	Nov.		
	13	→	Begin flooding hunt unit
	15		No H20. 11/30 - Pump OFF (Unit Full)
	Jan 7		Let H20 out

Unit: **Blind 93**
From waters surface to middle brace on screw gate

Water level guide	2007 Date	Actual Water level	Notes
	Mar.		
	Apr.		
	May 9		Planted corn - no-till (Failed)
	June		
	July		
			Planted buckwheat on corn (rained.) side where velvet leaf was dominant.
	Aug.		
	Sept.		
	25		Begin flooding hunt unit
	Oct.		
	16		1" lower than Full Pool
	Nov 15		Pumping more H_2O into unit. -OFF in PM

Darby
Unit: Pool 1
Acres: 200
2006 Activity: High water was released in December.



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Provide a hemi marsh rich in invertebrates and decrease P. Loosestrife infestations.

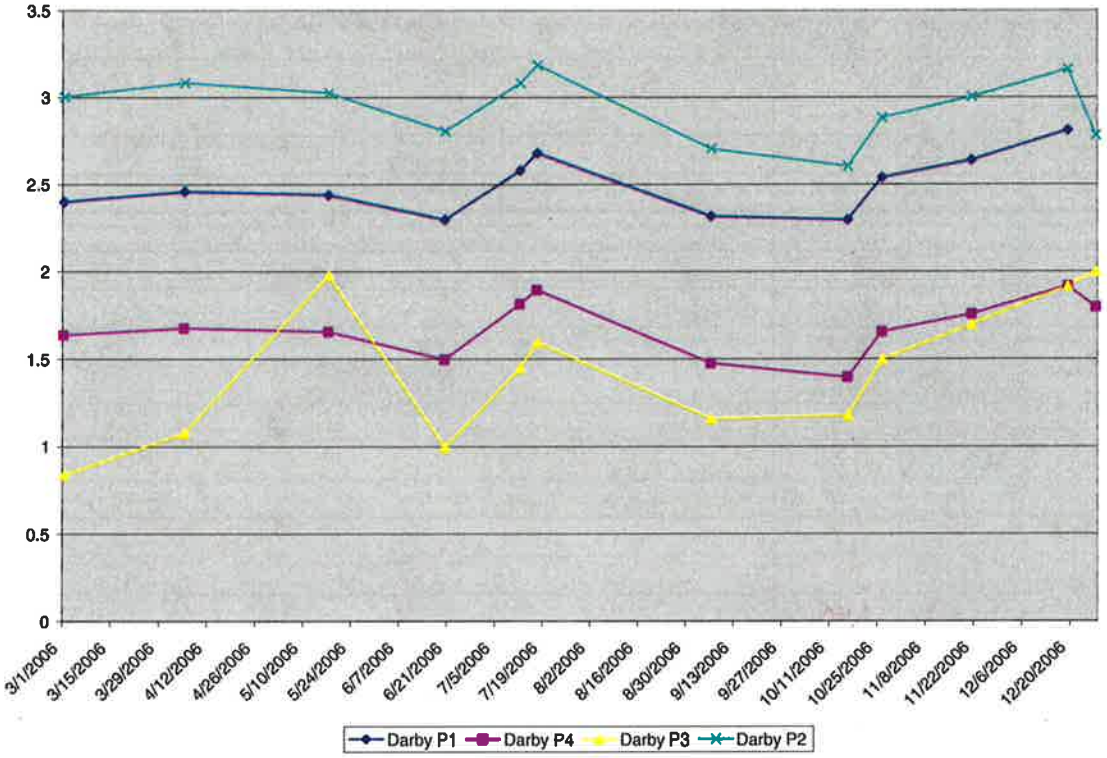
Strategies: Manage unit at full pool

Management Strategy Constraints:

Unit: **Darby Pool 4**

Water level guide	Date 2006	Actual Water level	Notes
	Mar. 22	2.00	
	26	2.00	Opened 4" 2:30
	Apr. 4	1.50	closed
	10	1.48	
	17	1.52	
	May 14	1.54	
	June 5	1.40	
	July 10	0.82	
	17	Dirty	Mudflats along East side by P. loosestrife & SW corners.
	Aug. 21	0.78	Mudflats gone
			√ to add H_2O?
	Sept.		
	Oct. 9	0.76	
	30	0.54	
	Nov 5	0.50	2500+ ducks
	27	0.74	
	12/3	0.8?	

Unit: Pool 4
Acres: 170
2006 Activity: High water released in December



Unit Goal: Provide marsh habitat for migratory birds.

Objectives: manage for plant diversity and hemi marsh conditions.

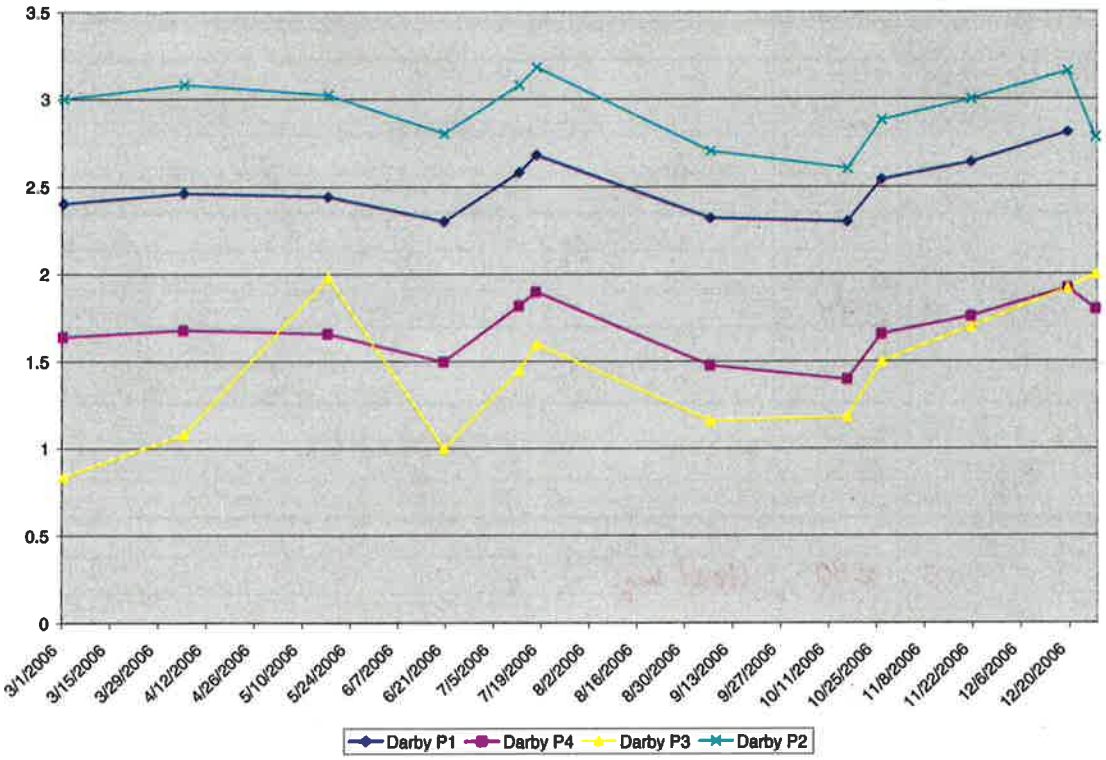
Strategies: Possibly conduct spring or summer draw down to germinate wetland plant production. Draw down will depend on availability of personnel to treat invasives.

Management Strategy Constraints: Unit has a history of purple loosestrife infestations. Particularly along the SE corner.

Unit: **Darby Pool 3**
Maintain full pool.

Water level guide	Date 2006	Actual Water level	Notes
	Mar 22	2.6	1 – 4" board low
	Apr. 4	2.56	
	17	2.54	
	May 14	2.46	
	June 5	2.30	Good reg.
	July 10	1.6	
	17	1.48	off of East dike 4-8" H2O. Smartweed stalks from last yrs growth thick, difficult to maneuver thru I think for birds. too into burning
	Aug. 21	1.78	
	Sept.		
	Oct. 9	1.46	~~NS~~ ditch breach on South dike flowing into unit ~~Pulled 1 board~~. letting H2O in from ditch. ~~Almost over the top board, so~~ 1 Board Pulled Boards currently set so if ~~1 board pulled~~ ditch over board, then ditch is over dike
	Nov 5	1.50	250 ducks
	27	1.86	
	12/3	1.90	

Unit: Pool 3
Acres: 25
2006 Activity: Agridrain replaced screwgate in March and new gauge installed. Unit filled from rain fall.



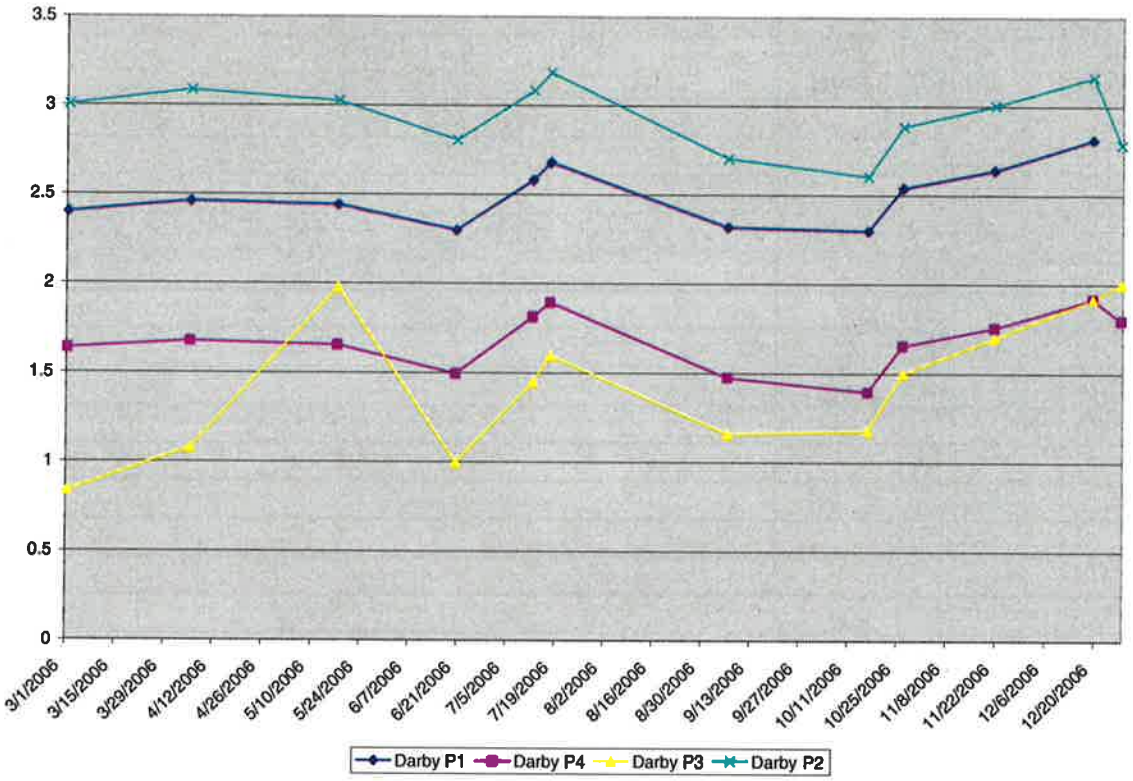
Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Provide a combination of both annual and perennial vegetation in a hemimarsh.

Strategies:

Management Strategy Constraints:

Unit: Pool 2
Acres: 25
2006 Activity: High water released in December.



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Manage for hemi marsh conditions

Strategies: Manage unit at full pool (3.0 in May and 2.3 in October)

Management Strategy Constraints:

~~(419) 836-7423~~ ♀ ~~Jackie (took over for Mark)~~
♂ ~~Jan Mallet~~
♂ ~~John Wadtho - Supervisor~~

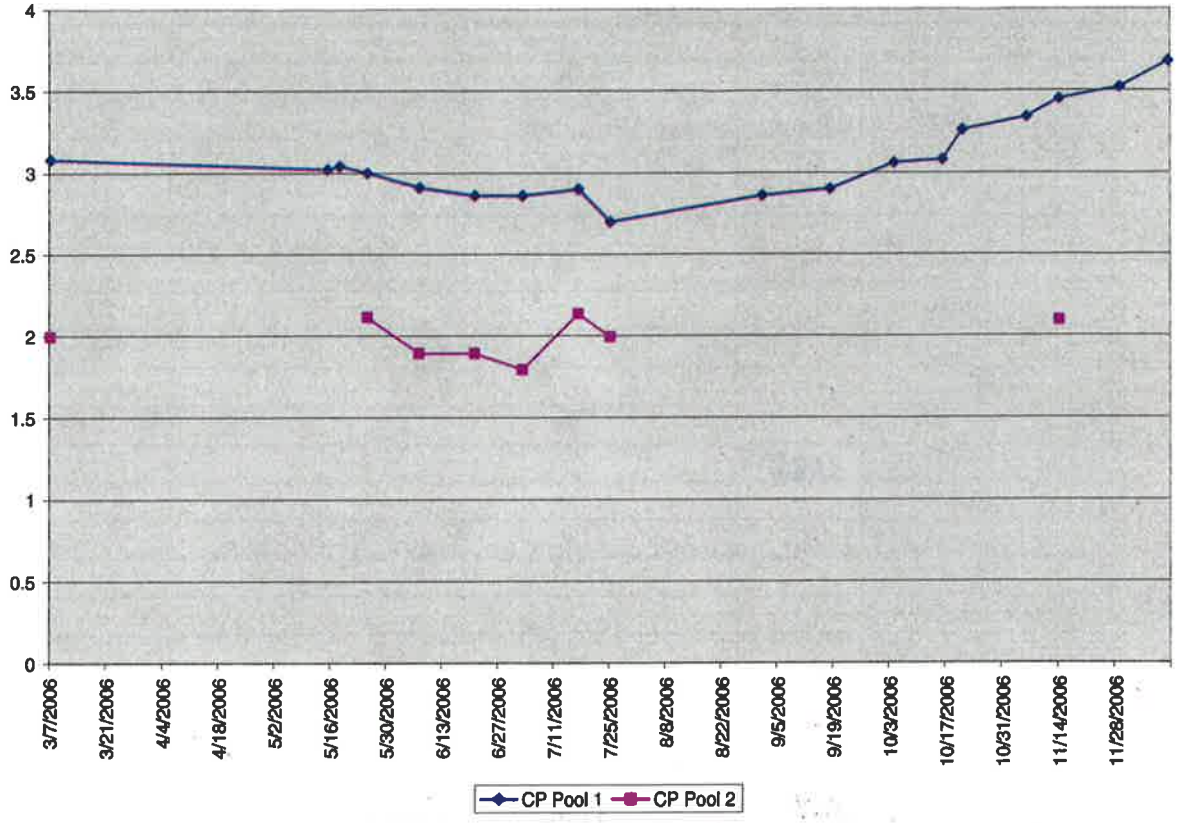
Unit: **Darby Pool 2**
Maintain full pool.

Water level guide	Date 2006	Actual Water level	Notes
2.8	Mar. 22	3.20	
	28	3.20	Opened 10" 8:30 am Closed 3:15pm - 3.12
	Apr. 4	3.08	
	17	3.02	
	May 14	2.96	
	June 5		
	July		
	Aug.		
	Sept.		
2.3	Oct.		

Unit: **Cedar Point Pool 1**

Water level guide	Date 2006	Actual Water level	Notes
	1/9	3.88	Open to lake @ west gate 3:30 pm 22" top of blue base to bottom screw bolt.)
	1/10	3.86	4:09pm - Opened all the way
	[redacted]/12	3.68	Closed
	3/13	4.04	Need to take 5/10's off + see about maybe more
	3/22	4.06	Opened full @ 2:30pm (3" above pink flag) gage needs reset
	3/28	3.7-3.8	Strong NE wind
	Apr. 4	3.0	Closed 1pm
	17	3.26	Gate leaking slightly
	May		
	June 13	2.88	
	25	2.72	Turned pumps on. Mud flats on east side! hrs 62575
	July 3	2.74	hrs. 63756 (1181 hrs) still pumping
	17	2.56-2.60?	Pump 2 running.
	23	2.60	Pump 1 running - water bubbling out near oil breather + zert
	Aug. 1	2.72	Pump 1 still running
	8	2.78	Pump 2 running
	15	2.78	Turned 2 off, P.1 on. Rice Full Flower, BWT in.
	21	3.00	Pump off 8/26 - 3.08 No mud flats.
	Sept.		
	Oct.		
	31	2.60	Low Lake levels
	Nov. 5	2.62	5500 + ducks
	13	2.59	Tundra swans 240 Lake is too low for pumping still.
	19	[redacted]7	259

Cedar Point
Unit: Pool 1
Acres: 1,460
2006 Activity: High water was taken off in early spring. Pumps were turned on in early August (set to automatic). Occasionally both pumps would run, but low lake levels prevented both pumps from running consistently. Pumping hardly kept up with evapotranspiration. Pumps were shut off in mid November.



Unit Goal: Provide nesting, foraging, and resting habitat for a variety of migratory birds and wildlife. To maintain populations of rare and endangered plants.

Objectives: Maintain full pool.

Strategies:

Management Strategy Constraints:

* FYI!

Beginning ... will be added @ the intake. Will possibly be able to mitigate/offset the issue when we need H2O if given enough notice.

Unit: **Cedar Point Pool 2**

Keep water as high as possible, without flooding neighbor's woods.

Water level guide	Date 2006	Actual Water level	Notes
	1/9	2.70	Very high! Water in Gradel's woods.
2.7	Mar. 13	3.02	
	22	3.10	High! Eagles on nest. Water in woods south of P2 - also high on S. dike
	Apr. 4		Pumping down w/ chrysalis
	5	3.08	Opened borrow
	May		
	June 14	1.3?	
	July		
	Aug. 15	1.08	
	21	1.16 or 1.26	Dirty
1.6	Sept.		
	Oct. 31	1.08	No H2O over
	Nov 15	dirty 1.1.?	Contacted Pumpin
	16	" "	someone is
	26	1.5? dirty	run longer.
			Will Pump

Pool 2 - Cedar Point Call log for Fall 2007 Pump Operations

11/15 - Spoke w/ Bob Towe. Pump is on.

11/16 - Checked Pool 2. Called Jan. No answer and no voicemail option. Called 3 times between 1:45pm + 3:15pm.

11/19 - ✓ P2. Pump running. Not much improvement. Called Jan. Asked him to run both pumps. South pump leaked oil, so it is being serviced

11/21 - H2O moving into unit. spoke w/ Jan 11:20am Pump 2 leaking oil badly. Will only use 1 pump

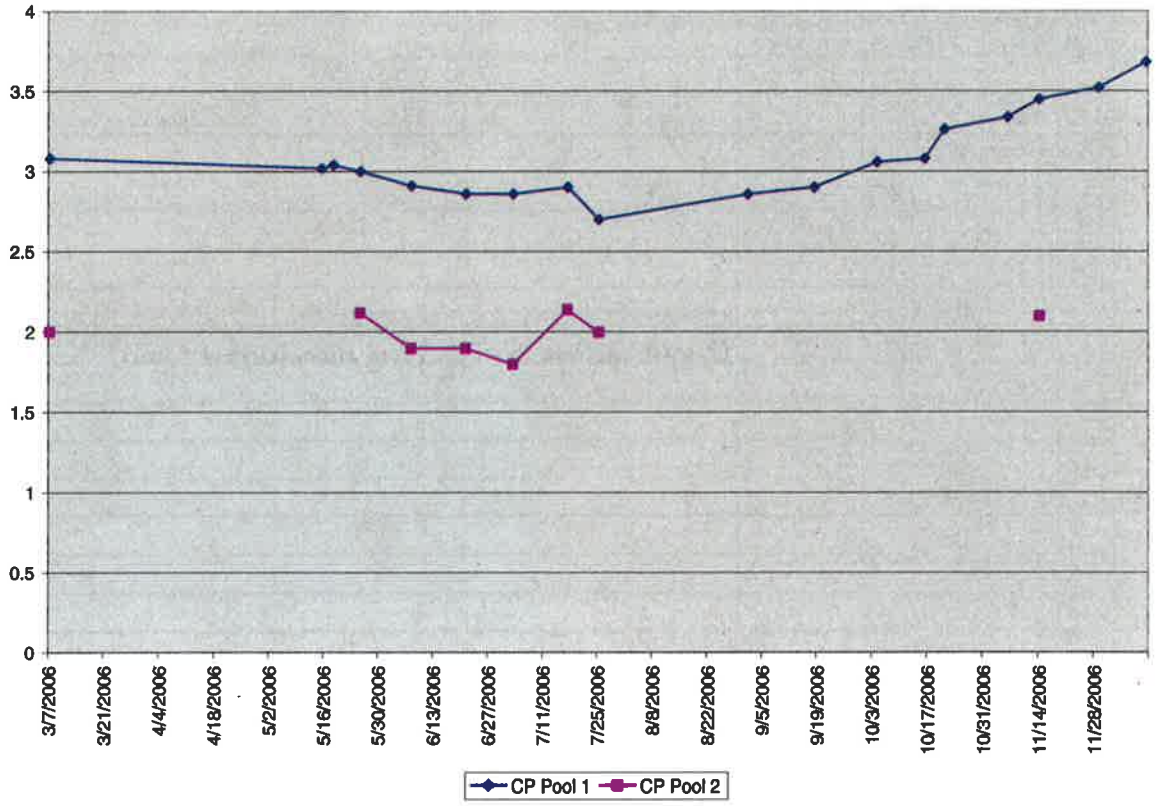
11/26 - 1.5? dirty water reached far East mudflats. Spoke w/ female @ 9:25am. Told her to turn pumps OFF Tuesday after 1st shift.

6am-1:30 MTW Mr. Jan Mallet, Toledo Pumping Station Operator 419-836-7423 (at site)

2pm-10pm S+S Mr. Bob Towe, " " Superintendant 419-936-3050 (in Toledo)

6-2pm pager → 419-218-1149

Unit: Pool 2
Acres: 135
2006 Activity: No active management



Unit Goal:

Objectives:

Strategies: Set pump up in Mid March for draw down for construction project on west dike. Possibly conduct spring burn, and/or mow phragmites patches.

Management Strategy Constraints:

Unit: **Cedar Point Pheasant Farm**
Measure from waters surface to top of water control structure

Water level guide	Date 2006	Actual Water level	Notes
	1/13	1.76	
	Mar. 14	2.12	
	22	2.18	
	Apr.		
	17	2.16	
	May		
	June		
	13	1.88	
	July		
	23	1.40	
	Aug 8	1.44	
	21	1.62	
	Sept.		
	Oct.		
	31	1.20	
	Nov 5	1.24	
	19	1.24	

Unit: Pheasant Farm
Acres: 155
2006 Activity: No active management

Unit Goal:

Objectives:

Strategies: Manage for against invasives. Maintain high water levels.

Management Strategy Constraints: Gate to county drainage ditch leaks.

Unit: **Schneider**
Maintain water 1' less than full pool. Monitor for potential flooding to neighbor.

Water level guide	Date 2006	Actual Water level	Notes
	Mar.		
	Apr.		
	May	?	
	14	1.44	Near top of board 12 least sandp., 1 sora, 1 gr. egret, 12 WBB
	June		
	July		
	10	0.58	Water only in channel + borrow areas
	Aug.		
	Sept 4	0.96	
	Oct. 9	0.46	
	Nov 5	0.26	

Unit: **Blausey**

Check boards!!

Water level guide	Date 2006	Actual Water level	Notes
	Mar.		
lots of	22	2.16	Removed 12" board - should drop ≈ 4". H2O up to telephone pole
holes ~			+ East Pump not operating but should be - ditch high, won't turn on.
≈30-50	28	1.90	trickle over boards. Pumps working
	Apr.		
	May		
	June		
	July		
	10	0.82	
	Aug.		
	21	0.74	
	Sept.		
	6	0.48	No water @ gauge, some water in unit - 4 mallards, 1 coot, 1 yellowlegs
	Oct 9	0.48	All dry
	Nov 1	0.48	Dry Still

Diefenthaler: Maintain full pool.

9/1 – ERIC Mistakenly turned pump on manuel + drew unit completely down to ditch.

Kontz: ~~Maintain full pool~~ Open to lake levels.

Schneider: (see other sheet)

Helle: SE unit needs more water.

/

Gaeth-Kurdy:

Navarre - Pumping down Pool 2 4/9/07 Combo 7556

5/22: P1 → 0.78 Can pump down. look @ again in fall to see if veg is going yet. Muskrats at well
P2 → 2.45
P3 → 0.75

11/6/07 P1 → Didn't check gauge, but veg looks good.
P2 → 1.62 lots of ducks. Veg looks good 2,000 – 2,500 ducks
P3 → 0.18 3,000 - 3500 ducks. Beaver action on south side. Muskrats thick in NE corner + south west side. But not too Bad. Most veg is recovering from high muskrat damage in 2006 Fall.

CITY OF TOLEDO

DEPARTMENT OF PUBLIC UTILITIES

November 21, 2007

Mr. Doug Brewer
Wildlife Refuge Manager
United States Department of the Interior
Fish & Wildlife Service
Ottawa National Wildlife Refuge
14000 W. State Route 2
Oak Harbor, OH 43449-9485

Dear Mr. Brewer:

We are in receipt of your letter dated November 14, 2007 regarding the flooding of the Pool 2 marsh at Cedar Point NWR. We are more than happy to cooperate with you. We will begin pumping promptly and will wait to hear from you for when we should cease pumping into the marsh.

If you have any questions or concerns, please feel to contact me at **419-936-3057**.

Yours from Toledo - a City of the Future!*

John D. Walthall
Commissioner

JDW/tla

fDi Magazine-April 2007

Division of Water Treatment
Robert R. Williams, Director John D. Walthall, Commissioner
600 Collins Park Ave., Toledo, Ohio 43605 USA
Telephone 419-936-3021 FAX: 419-936-3053 www.toledo.oh.gov

United States Department of the Interior

Fish and Wildlife Service
Ottawa National Wildlife Refuge
14000 West State Route 2
Oak Harbor, Ohio 43449-9485
Phone: 419-898-0014 Fax: 419-898-7895

November 14, 2007

Mr. John D. Walthall
Commissioner of Water Treatment
P.O. Box 786
Toledo, Ohio 43697-0786

Doug-
I gave Bob Towe, the superintendent, your cell # for Emergency use only.
-Sara

Dear Mr. Walthall,

As you may know, Cedar Point ity of Toledo pumping station. The refuge ow that are used to flood the "Pool 2" marsh at Ceda e spring of 2007. The refuge would like to request rliest convenience to flood pool 2. Flooding the mar ll and early winter. Approximately 6 – 12 inches of w aff will monitor progress daily and report to the att e operation. If you have any questions or concern life Refuge Specialist at 419-898-0014. We hi to working together.

Sincerely,

Doug Brewer
Wildlife Refuge Manager


Goose
Pen